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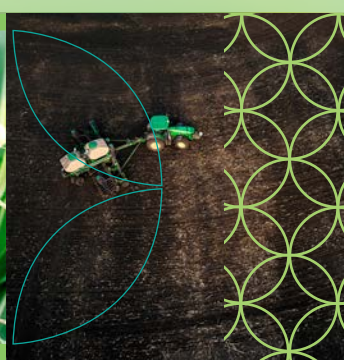
BFAP BASELINE

AGRICULTURAL OUTLOOK

2022 - 2031





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Agricultural Outlook

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FOREWORD

The Bureau for Food and Agricultural Policy (BFAP), established in 2004, serves the agro-food, fibre and beverage sectors across Sub-Saharan Africa, and particularly in South Africa. Our purpose is to inform better decision-making by providing unique insights gained through rigorous analyses, supported by credible databases, a combination of integrated models and considerable experience. Since its inception in 2004 the Bureau has developed a distinct value proposition to deliver a holistic solution to public sector and private clients active in the agricultural sector and related value chains. This offering is complemented through BFAP's investment in the Integrated Value Information System (IVIS), a geo-spatial platform which further enhances BFAP's product offering by providing enhanced visual systems-solutions to the integration of data and insights to support strategic decision-making along multi-dimensional value chains.

The BFAP Group consist of a team of experienced experts with a range of multi-disciplinary skills including agricultural economics, food science, mathematics and data science, engineering, supply chain management, socio-economic impact assessment, systems technology, and geo-informatics. We fundamentally believe that a competitive and thriving agricultural sector with its related value chains is built on long-run partnerships. Hence, BFAP has developed a well-established network of local and international collaborators and partners in the public and private sector. This includes long-standing partnerships with private sector clients, research partners like the Food and Agricultural Policy Research Institute (FAPRI) at the University of Missouri in the USA, the Food and Agricultural Organization of the United Nations (FAO) in Rome, the Organization for Economic Cooperation and Development (OECD) in Paris, and the International Food Policy Research Institute (IFPRI). BFAP is also one of the founding members and partners of the Regional Network of Agricultural Policy Research Institutes (ReNAPRI) in Eastern and Southern Africa. As a team and as a network, we pool our knowledge and experience to offer the best possible insights and access to a unique high value network.

BFAP acknowledges and appreciates the tremendous shared insight of numerous industry specialists and collaborators since our inception in 2004. The financial support from the Western Cape Department of Agriculture and ABSA Agribusiness towards the development and publishing of this Baseline is also gratefully acknowledged.

Although all industry partners' comments and suggestions are taken into consideration, BFAP's own views are presented in this Baseline publication.

EXECUTIVE **SUMMARY**

The 2022 edition of the BFAP Baseline is presented amidst severe uncertainties in a turbulent world economy. In 2020, the COVID-19 pandemic induced a global recession overshadowing the impact of the global financial crisis almost a decade before. Amid divergent strategies globally to manage the pandemic's spread and multiple stimulus programmes to mitigate the impact of these, growth returned in 2021, but with a constant threat of disruption from persistent supply chain challenges and bottlenecks that constrain effective production and transportation of goods across the world. In 2022, the recovery is facing new headwinds following Russia's invasion of Ukraine, which exacerbated supply constraints and, along with the sanctions imposed in response, sent further shockwaves through global energy and food markets. As governments globally grapple with measures to contain unprecedented inflation amid risks of a new recession, weather conditions in key production regions fueled further uncertainty in agricultural commodity markets, sending prices to record levels. The response by some governments to restrict exports in an effort to bolster domestic food security, only added to prevailing uncertainties.

The strong run in fuel, energy and agricultural commodity markets globally also has implications for food inflation and affordability. In June 2022, headline consumer price inflation in South Africa reached 7.4%, with food inflation higher at 8.6%. While this represented the highest general inflation rate since May 2009, food inflation remains below the peaks of 2015/16, when it reached 11.6% at the height of the drought. Nevertheless, in an environment where structural challenges, fiscal constraints and persistent load shedding continue to constrain economic growth and unemployment continues to rise, consumer spending power has come under increasing pressure. Since 2019, many consumers have regressed from upper middle to lower middle income groups, reversing some of the gains in upward class mobility observed over the preceding decade. South Africa's food inflation remains well below many other, even more developed regions such as the USA and the EU, but current rates, in general and for food, still exacerbate affordability constraints. The current extent of such constraints is such that a household of four, earning income from two full time minimum wage equivalent jobs and two child support grants, with children benefiting from school feeding programmes, would still need to spend 30% of their monthly income on food to afford a reasonably balanced diet, denoted by BFAP's 'thrifty healthy food basket'. This basket is estimated to be unaffordable for half of South Africa's population in 2022. As a consequence, households are forced to revert to staple maize consumption, as is clear from the increase in the proportion of maize milled for human consumption over the past two years.

South African agriculture has showed remarkable resilience amid this turmoil. In 2021, the sector grew by 8.3%, having already expanded by 13.4% in 2020, making it the strongest performing sector in the economy since the start of the pandemic. This performance is remarkable as it has come despite a wave of domestic challenges of rapidly deteriorating infrastructure (mainly roads and ports), load shedding, and riots around major trading routes. It reflects the rare combination of strong output and high prices - output benefited from investments into expansion over the past decade, as well as favourable weather conditions across most of the country since 2020, whereas global market dynamics pushed prices higher, even for surplus commodities such as maize, which have traded at export parity levels for most of the past three years. In 2022, further growth is expected, but is, at 5%, much slower as spiraling input costs are offsetting much of the projected revenue gains in both field crops and animal products, whereas prices in many horticultural industries are coming under increased pressure.

Although the short- and medium-term market fundamentals will run their course with supply and demand adjusting over time, it is the long-term strategic policy interventions and investments that will drive the future of South Africa's agro-food system. The agro-food system has a broad footprint, with complex interlinkages with the rest of the economy, and the contribution of the informal sector is grossly underrated. Our food system requires a portfolio approach that combines highly diverse value chains with a wide spectrum of producers linking to a range of formalised and sophisticated markets on the one extreme, and completely informal markets on the other. Efforts are required to reduce the persistent dualism in the sector, driving development and enable a diverse range of primary producers and value chain operators to flourish.

Globally, various governments' responses to the prevailing crisis have focused on trade and food security, but farmers and agro-processors across the world are responding to

opportunities and risks posed in the current environment. With more land coming into production around the world, and if weather conditions improve, the supply response could be rapid, replenishing stocks and driving prices down over the next two years. Similarly, the turmoil in global fertiliser markets will trigger responses to diversify import sources and expand production. In South Africa, the projected response in the various agricultural subsectors can be summarised as follows:

- In the field crop sector, producers are expected to respond to positive margins over the past three years by expanding production area to a 25-year high. However, as prices normalise, margins are expected to tighten over time, leading to a contraction out of marginal areas that cannot be cultivated sustainably at normalised export parity levels, and so production is expected to stagnate in the medium term. Industries such as soybeans, which have grown rapidly in the past, are maturing and will need to produce sustainably at export parity levels in future. Sustained higher production levels will require accelerated production growth from livestock to generate additional demand for animal feed, as well as revitalisation of the land that has become unproductive under the current land reform programme. Comprehensive producer support, access to credit and insurance safety nets are essential to grow this segment of the market.
- By far the largest agricultural subsector, livestock is also sensitive to constraints on consumer spending, which underpins weaker consumption growth over the Outlook relative to the past. However, these industries have grown in the past, led by accelerated exports in the case of beef and wool, while the poultry and pork industries expanded the share of domestically produced products relative to imports in recent years following investment in intensive operations. However, growth projections for the coming decade are balanced on a knife's edge. With domestic consumers under pressure, production growth will rely on expanded exports. Yet the animal health system, an essential precondition to achieve this, is currently inefficient in managing diseases, resulting in more frequent and widespread outbreaks, which hampers productivity and limits export opportunities. Failure to address disease management constraints through improvement in animal health services is costing the industry and the country billions of rands in lost exports and South Africa is missing out on what is perhaps one of the greatest opportunities for inclusive growth in agriculture.
- The horticulture sector has been one of the most consistent in terms of historic growth. Its global competitiveness and export orientation makes it less sensitive to the domestic spending power constraints that have influenced other sectors, and the area under high value fruit and nuts is estimated to have expanded by 130 000 hectares over the past decade. This is a major success, but port infrastructure has not expanded and prices are coming under increasing pressure as a result of volume growth in existing markets and rising competition from especially Peruvian fruit. With additional volumes expected to enter the market in the next few years as young trees reach bearing age, exports are projected to grow by a further 30% by 2031. This implies an urgent need for government to negotiate favourable, competitive access to new export markets, and to invest in upgrading port facilities in order to ensure that prices remain at sustainable levels in a sector that is the major employer within agriculture.

In previous Baseline publications, BFAP has highlighted key interventions that can accelerate growth, but will need to be prioritised to achieve long-run development goals, while being sustainable and profitable from a market-led perspective. We previously referred to these interventions as pre-conditions for inclusive growth. The medium-term baseline growth path is conservative, and acceleration will require a favourable environment, underpinned by these preconditions which include 1) a stable, conducive policy and investment environment; 2) comprehensive, sufficient and predictable infrastructure as well as service provision and maintenance, including electricity, roads and water, with well-functioning municipalities; 3) comprehensive farmer support programmes; and 4) effective state services (e.g. trade affairs, port authorities, veterinary services, biosecurity, plant health, agricultural research etc.). These preconditions and the environment that they create will ultimately determine long-term growth trajectories. Within specific sectors, the basic pre-conditions must be complemented by targeted interventions to unlock growth.

The baseline projection is considered an average outcome, reflecting the assumption of stable weather conditions. It provides an indication of the fundamental market equilibrium, but also acknowledges that producers will face significant volatility around this average over the coming decade. South Africa's agricultural sector is highly dependent on rain fed production and therefore vulnerable to extreme weather events. In this regard, the current dynamism in global markets has heightened focus on the crucial land-water-energy and food nexus, which is increasingly central to climate change discussions globally. Balancing the use and management of natural resources (land and water) to satisfy the increasing demand of human activities (energy and food) and socio-economic upliftment (jobs, equality) will require careful strategic planning and cross-sectional trade-offs.


Summary Report
Business Report

TABLE OF **CONTENTS**

INFORMING POLICY AND INVESTMENT DECISIONS:
Balancing short term tactical responses with long-term development goals

Over the past two years, we have witnessed a rapid rise in global agricultural commodity prices (Figure 1), caused by a combination of external shocks that have not only affected fundamental supply and demand dynamics, but have also fuelled uncertainty in global futures markets for agricultural products, input supplies and energy. One of the key drivers that triggered this cycle of high prices more than two years ago, was the rebuilding of China's pig herd following the decimation caused by the outbreak of African Swine Fever in 2018. Rebuilding also centred on more commercialised, large scale structures, that use feed more intensively, hence this resulted in a sharp rise in the demand for feed grains and oilseeds. This was followed by the COVID-19 pandemic and lockdown regulations that dumped global supply chains into turmoil, with disruptions that are still having an impact on effective production and transportation of goods and services across world markets today. During the pandemic, supplies and consequent trade of agricultural produce were further constrained by adverse weather conditions in some key production areas. Ad hoc government responses, mainly due to food security concerns around rising prices as well as availability of supplies, resulted in policy interventions such as export restrictions, which actually worsened the impact of the lockdown regulations. Furthermore, major support packages especially in developed countries supported consumers and consequently the alignment of demand with supply levels seemed to be delayed, driving prices up even further. This certainly supported the prices that South African fruit exporters received on global markets at the height of the pandemic.

Just as lockdown regulations eased and economic growth rebounded in 2021, Russia invaded Ukraine in February 2022, which sent another shockwave through global energy, food and fuel markets, with vegetable oil and wheat markets severely affected due to Russia and Ukraine's relatively large share in global trade. The impact of major external shocks, the concomitant uncertainty regarding supply and the consequent response by governments has pushed agricultural commodity prices well beyond the levels that have previously been observed under similar stock-to-use-ratios. Figure 1 compares stock-to-use ratios for maize and sunflower to the corresponding price levels. For example, in 2012 global maize prices traded just above $300/tonne at a stock-to-use ratio below 15%; however over the first half of 2022, global maize prices are trading well above $300/tonne while the stock-to-use ratio is above 25%. Importantly, a substantial share of the current stock is held in China and the Black Sea region (where war is ongoing), hence there is a greater level of uncertainty around the estimated levels. Nevertheless, world markets seem to have become far more sensitive to the actual availability of tradable supplies, rather than just global stock levels that might be stuck in the wrong location due to geo-politics, ad hoc responses from governments or lockdown regulations caused by the COVID-19 pandemic.

Another example is the sunflower market, where global prices have reached all-time highs, despite the fact that the stock-to-use ratio improved drastically in 2021. The irony is, however, that Ukraine's record sunflower crop in 2021 was the key driver behind this sharp turn-around in global stock levels. In fact, if wheat and barley stocks are added, it is estimated that Ukraine currently still stores approximately 25 million tonnes of grains and oilseeds and the 2022 crop of major grains and oilseeds could still come in at around 50 million tonnes despite the war. This would put Ukraine's stock levels well beyond their local storage capacity plus domestic requirements, and under normal circumstances significant volumes would be destined for the export market. Naturally, any of these predictions and expectations are highly uncertain, as the war rages on and supply chains and export ports remain highly affected. As things stand in July 2022, Ukraine was still exporting some limited volumes, but was only

Figure 1: Global prices and stock-to-use ratio
Source: USDA, 2022

able to use land routes into the EU, which drastically diminishes export capacity.

However, what is certain, is that the world is responding. Stakeholders in private and public sector are taking action and the core purpose of the BFAP Baseline in 2022, like all preceding Baseline publications since 2004, is to inform policy and investment choices and to find a strategic balance between short term tactical responses and long-term development goals.

Whereas governments' responses with respect to agriculture have mainly been focussing on trade and food security, farmers and agro-processors across the world have been responding to opportunities and risks posed in the current environment. The latest projections by organisations such as FAPRI, OECD and FAO, who BFAP has partnered with for many years, point to a significant supply response to high grain and oilseed prices. This entails expanded acreage under production, and comes despite higher fertiliser prices. Nevertheless, yields are still weather dependant and stocks rebuilding will likely be prioritised as strategies change under current supply chain challenges. Hence, best estimates, even under normal weather conditions are currently that global prices will decline over a period of two years. If greater supplies reach the market sooner, this drop in prices could even be faster, depending on the lasting impacts of the war in Ukraine. Similarly, the first signs are already emerging that fertiliser prices have reached their peak and are starting to trend downward, as high prices

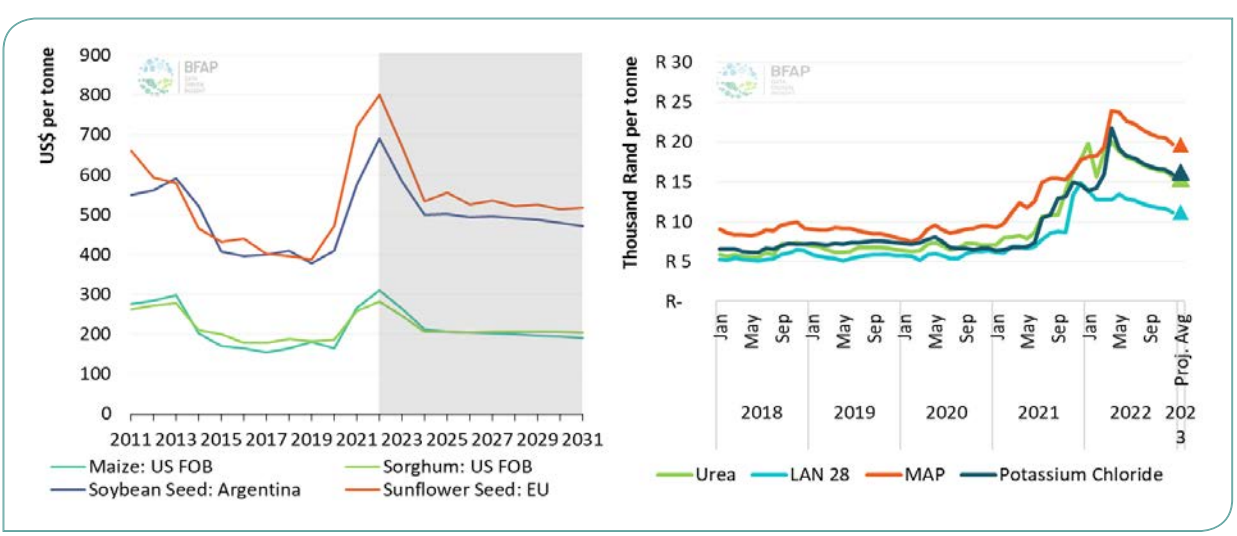


Figure 2: Outlook for international agricultural and input prices
Source: FAPRI, OECD-FAO, World Bank, IMF, 2022

have driven increased efficiency in use in many parts of the world and stockpiles are increasing in ports of key markets like Brazil that imports 14% of globally traded fertiliser.

The current turmoil in fertiliser markets (Box 1), where Russia typically provides 14% of total global fertiliser exports, followed by China with 12%, will certainty trigger responses by governments and industry to diversify potential sources of imports. Furthermore, various governments, especially in African countries (Zambia, Tanzania, etc) have publicly announced their intention to invest in the production of key fertiliser compounds. Although one can anticipate that these potential investments will take years to have a real impact on markets, it is certainly a strategy worth pursuing with much higher potential return on investments with respect to overall agricultural transformation than the current fertiliser subsidy schemes that only benefit the producers that have access to it. Sub-Sahara Africa (SSA) only accounts for 3-4% of global fertiliser use and local production can potentially improve the affordability for local farmers, while improving the terms of trade significantly through switching from a net importer to net exporter of specific fertiliser compounds.

The agricultural sector of South Africa expanded by 8.3% in 2021, well in line with BFAP's baseline projection of 7.6% in August 2021 and the second consecutive year of strong performance following 13.4% growth in 2020. Despite higher input prices, BFAP estimates real agricultural GDP in South Africa in 2022 to improve further by 5%. This makes agriculture the strongest performing sector in the economy since the start of COVID-19 and more recently the Russia-Ukraine war, reflecting its resilience during a challenging period. Over the medium term, growth in real terms is projected to slow down (Figure 5), specifically for

BOX 1: CONTEXT ON GLOBAL FERTILISER MARKETS

One of the major spill-overs from the ongoing war between Russia and Ukraine has been soaring fertiliser costs globally. Figure 3 shows that Russia is the single biggest exporter of chemical fertiliser in the world, followed closely by China, and with Belarus also in the top 10 and the third largest producer of potassium. The magnitude of Russia and key ally Belarus' share in global export supplies suggests that the impact of the war and the subsequent sanctions have had a substantial impact on prices. However, the reality is that prices of urea, phosphate and potassium already increased in 2021, suggesting that the war was the final link in a chain of events that have driven prices higher. These factors include:

- Supply constraints – following restrictions related to the pandemic in 2020, power rationing in China, which forced production cuts, the damage caused by hurricane Ida in the USA in 2021, nutrient export restrictions imposed by Russia and China in 2021 and sanctions against Belarus and Russia
- Rising raw material costs in the form of crude oil and natural gas, which exacerbated fertiliser supply constraints due to availability and costs
- Increasing demand as a result of rising agricultural commodity prices, and
- Persistent challenges and bottlenecks with global logistics that have led to sharp increases in shipping costs.

With the war in Ukraine still ongoing and intermittent restrictions in China as it maintains its zero COVID policy, the question at the forefront of many discussions is when prices will start to normalise. There have been some indications in recent weeks that international prices have peaked – partly in response to improved stock levels in major importing countries such as Brazil and partly because demand is slowing in response to high prices.

Figure 4 presents the outlook for global fertiliser products, as published by the World Bank in April 2022. It points to a small decline in prices in 2023, followed by a more substantial decline in 2024, as supply dynamics normalise. However, another important consideration is that not all countries have imposed sanctions on Russia and, following an initial period for logistics to adapt, supply from Russia into countries such as Brazil has increased. This is undoubtedly also a contributing factor to the decline in prices in recent weeks and suggests that we may well have seen the peak, with prices being driven down further in time as additional investments by other countries into fertiliser production start to come online.

Sub Saharan Africa as a whole and South Africa in particular remains a net importer of fertiliser products and hence global prices are an important factor contributing to high prices domestically. Other factors that contribute to the spiralling

costs are the costs of shipping and logistics, as well as exchange rate volatility, which could exacerbate or offset global price dynamics at any point in time. What is certain is that domestic costs have increased sharply for the second year in a row in 2022 and, given global projections from institutions such as the World Bank, may require multiple years to normalise fully.

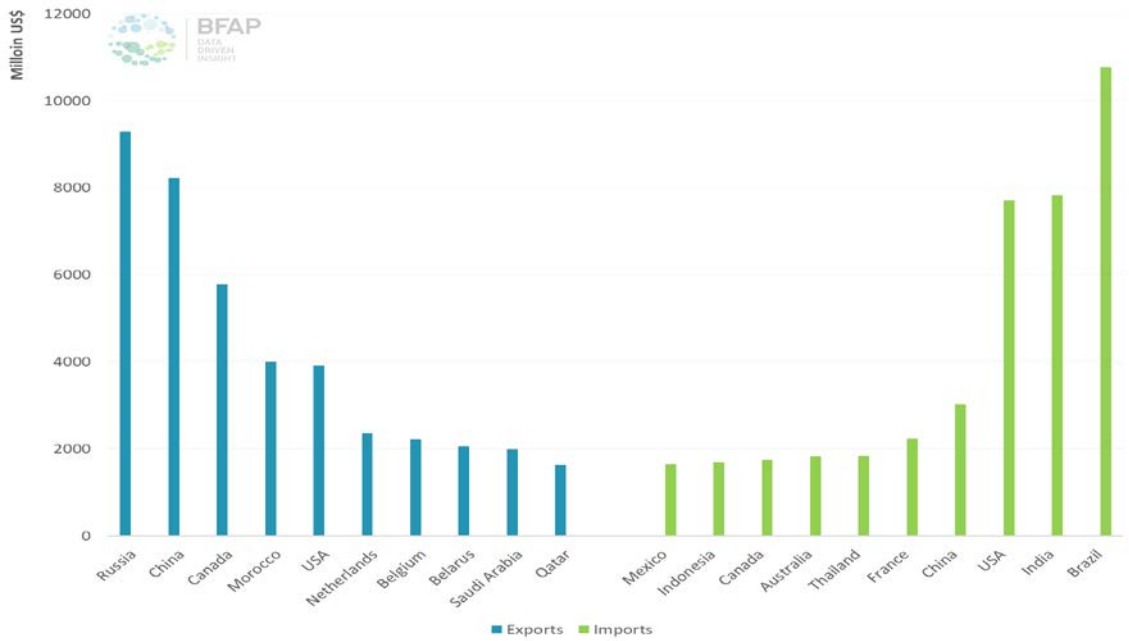


Figure 3: Major importers & exporters of fertiliser globally

Source: ITC Trademap, 2022

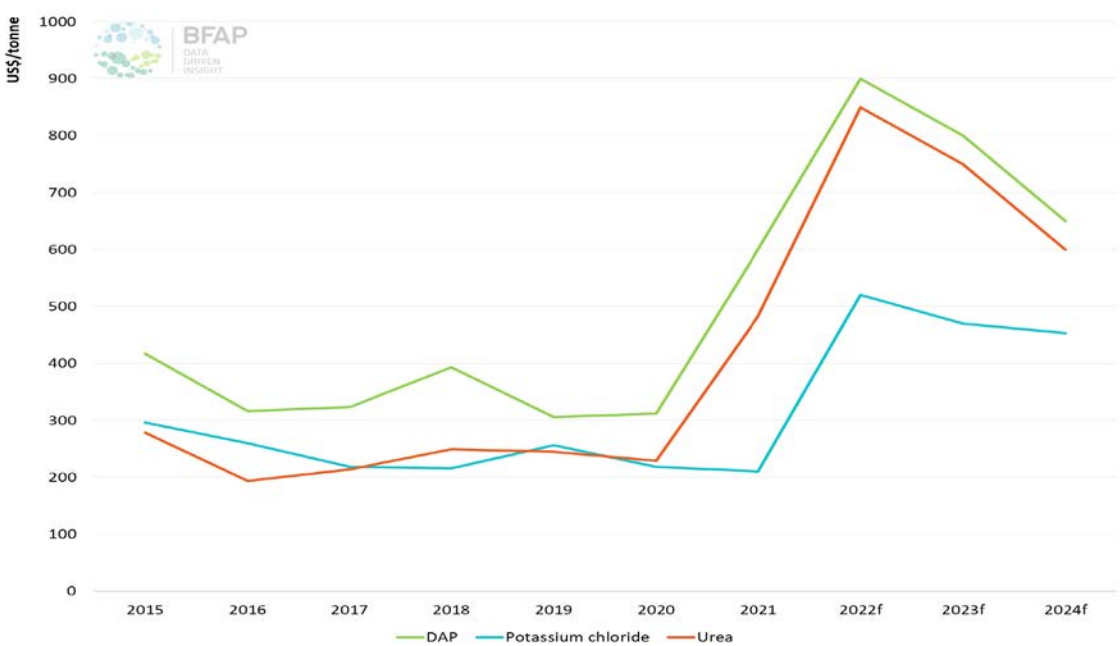


Figure 4: Global fertiliser price trends

Source: World Bank: 2022[1]

[1] 2022f, 2023f and 2024f are forecasted

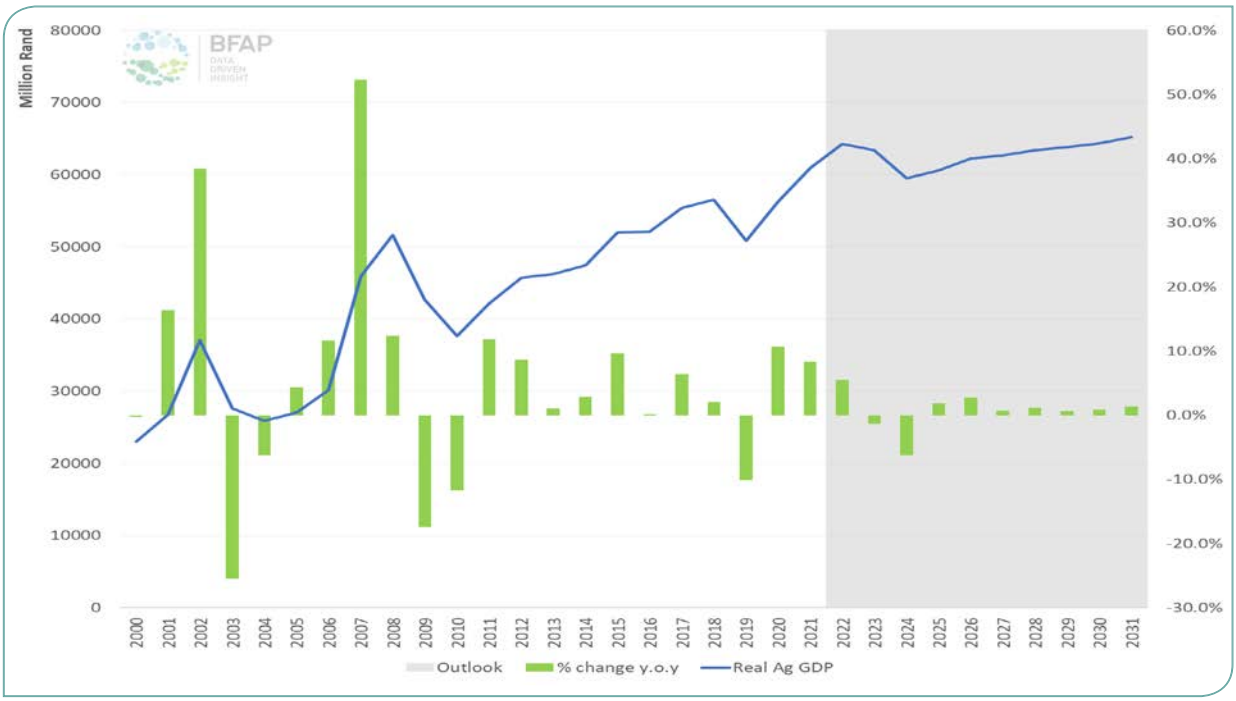


Figure 5: Real agricultural GDP in South Africa: 2000-2031

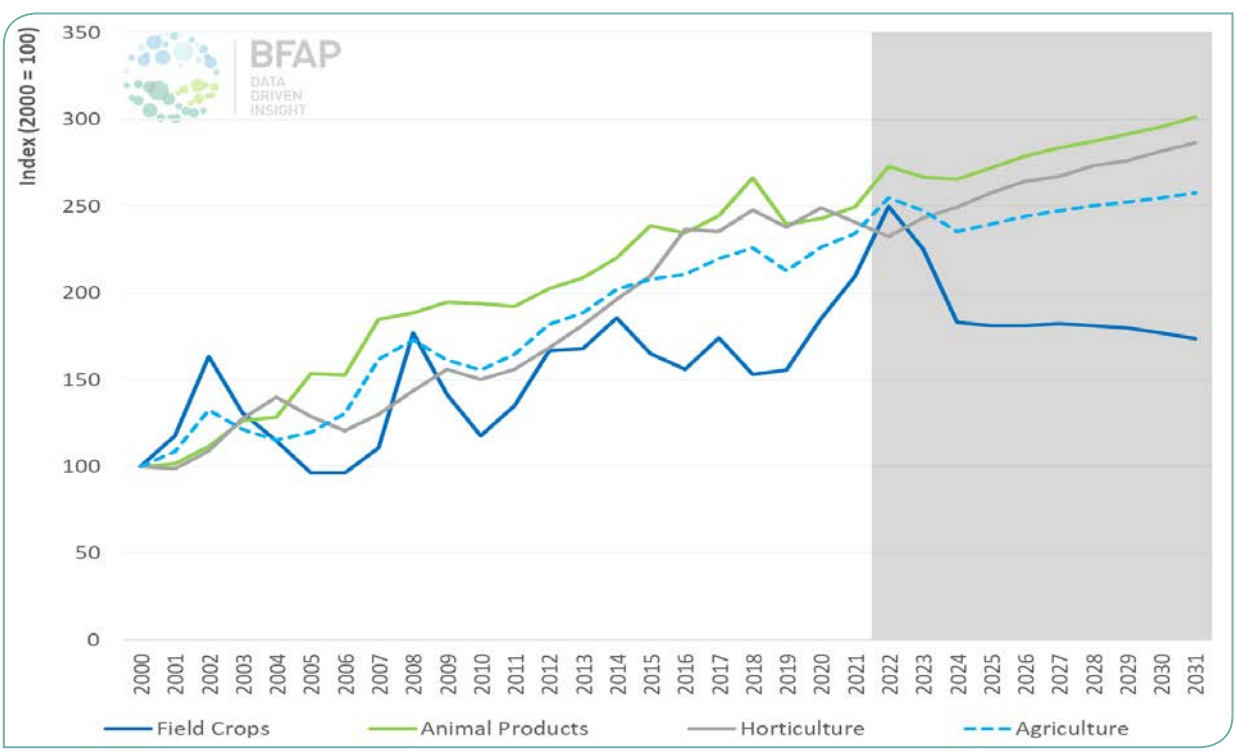


Figure 6: Real gross value of agricultural production in South Africa per subsector

field crops, where the normalisation to lower global prices over the next two years will be transmitted to local markets (Figure 6). Lower feed grain prices will provide some level of relief for intensive livestock operations, but local demand for these higher-value products will be dampened by the poor performance of the South African economy.

The resilience and the performance of the wider agro-food system, despite a wave of domestic challenges of rapidly deteriorating infrastructure (mainly roads and ports), load shedding and riots around major trading routes, is further underlined in the comparison of overall food inflation. South Africa's food inflation rate is still amongst the lowest of the selected group of countries presented in Figure 7. The last time inflation was this high on global agendas was during the energy crisis of the 1970's. In South Africa, the rise in energy prices is also adding the proverbial fuel to the food inflation fire. With staple food commodities such as bread and cereals already 8.4% higher compared to this time a year ago, rising fuel costs are further contributing to inflationary pressures through manufacturing and distribution costs of food.

Although the short- and medium-term market fundamentals will run their course with supply and demand adjusting over time, it is the long-term strategic policy interventions and investments that will drive the future of South Africa's agro-food system. The agro-food system has a broad footprint, complex interlinkages with the rest of the economy, and the contribution of the informal sector is grossly underrated. Our food system requires a portfolio approach that combines highly diverse value chains with a wide spectrum of producers linking to a range of formalised and sophisticated markets on the one extreme and completely informal markets on the other. Efforts are now required to reduce the persistent dualism in the sector, driving development and enabling a diverse range of primary producers and value chain operators to flourish.

The long-term dynamics with required interventions per sub-sector can be summarised as follows:

• **Livestock**, the largest agricultural subsector, has ample potential for accelerated, inclusive growth. Strong progress over the past decade was underpinned by substantial investments in intensive operations producing chicken, eggs and pork. The beef industry also shifted from a net importing to a net exporting position, and wool exports have been hailed as a success, specifically because comprehensive support efforts bolstered output from smallholder communal farmers, delivering into export markets. However, growth projections for the coming decade are balanced on a knife's edge. Domestic consumption growth is expected to slow due to weaker spending power; thus production

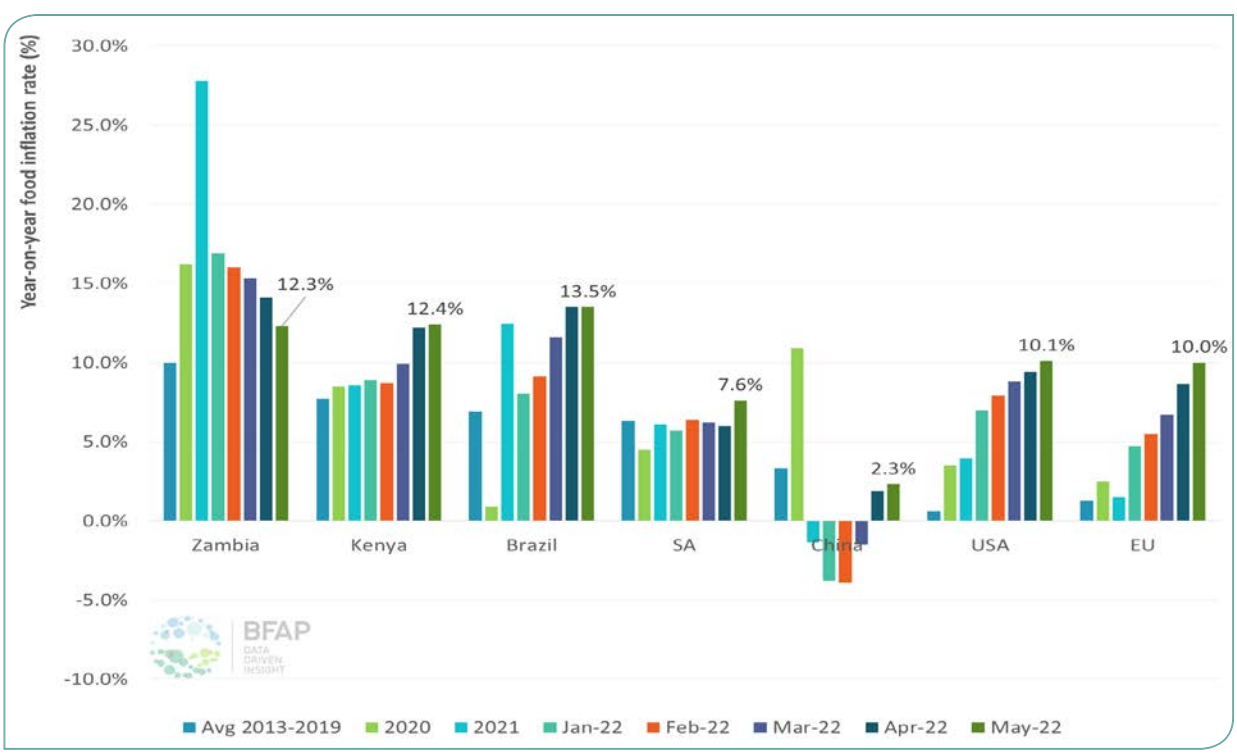


Figure 7: Food price inflation comparison in selected countries

growth will rely on expanded exports. The animal health system, an essential precondition to achieve this, is currently inefficient in managing disease outbreaks, which hampers productivity and limits export opportunities. **In fact, it is safe to argue that the single largest driver of growth of the South African agriculture and agro-processing sector is animal health and overall biosecurity.**

• For **field crops, the 2022 BFAP Baseline projects that South African farmers will respond to positive margins by expanding the area under production to the highest level in 25 years.** However, as margins are expected to tighten over time, production levels will stagnate again, unless additional demand is generated in feed markets or alternative export markets. Furthermore, tight margins will have an adverse impact on the growth trajectory of emerging black farmers who are entering the sector for the first time. Vast tracks of land, where dedicated commercial field crop production by black farmers can be expanded, have become unproductive under the current land reform programme, with minimal producer support and extension services. Comprehensive producer support, access to credit and insurance safety nets are essential to grow this segment of the market. Under baseline assumptions, including stable weather, further real growth in the value of field crops beyond 2024 is limited. Even for soybeans, one of the most dynamic sectors in recent years, growth could slow as the industry moves towards self-sufficiency. Although a major milestone, this introduces the need to compete sustainably at export parity levels, which can be enabled by introducing new seed technology and germplasm, along with a constant drive toward improved farming practices, better efficiency in handling and processing, and investment in logistics - especially transport to coastal areas where almost one-third of soybean meal is consumed.

• Within **horticulture**, BFAP estimates that the area under high-value export fruits and nuts has expanded by 130 000ha over the past decade. Consequently, export volumes could rise further by roughly 30% by 2031. **While a success in itself, this will bring significant price pressure in many markets, highlighting the need for government to negotiate favourable, competitive access to new export markets, and to invest in upgrading port facilities.** In light of sharp increases in input and shipping costs, the need for additional market access to keep prices at sustainable levels becomes even more pertinent. Furthermore, critical maintenance in irrigation scheme infrastructure has fallen behind, and water losses are estimated at approximately 30%. While on-farm water use efficiency has improved with the rising prevalence of netting, expansion and maintenance of infrastructure in existing irrigation schemes will be critical for new entrants to enter the sector successfully. Investments that improve transport efficiency and port logistics will also support the competitive, export orientated horticultural sector. Export orientation makes this sector less sensitive to domestic spending constraints and it is currently reaping the rewards of more than a decade of investment. As a major employer within agriculture, the sustainability of these investments must be prioritised going forward.

Over the years, the BFAP Baseline has highlighted key interventions that have to be prioritised to achieve long-run development goals, while being sustainable and profitable from a market-led perspective. We previously referred to these interventions as **pre-conditions for inclusive growth.** The medium-term baseline growth path is conservative, and acceleration will require a favourable environment, underpinned by these preconditions which include 1) a stable, conducive policy and investment environment; 2) comprehensive, sufficient and predictable infrastructure as well as service provision and maintenance, including electricity, roads and water with well-functioning municipalities; 3) comprehensive farmer support programmes; and 4) effective state services (e.g. trade affairs, port authorities, veterinary services, biosecurity, plant health, agricultural research etc.). These preconditions and the environment that they create will ultimately determine long-term growth trajectories. Within specific sectors, they must be complemented by targeted interventions to unlock growth.

It is encouraging to see that most of these pre-conditions have now been incorporated in the recently signed Agriculture and Agro-processing Master Plan (AAMP), where social partners agreed to the vision of *"Globally competitive agriculture and agro-processing sectors that drive market-oriented and inclusive production to develop rural economies, ensure food security, and grow decent and inclusive employment and entrepreneurial opportunities for all participants in agriculture and agro-processing value chains"*. The main challenge, remains the effective delivery and implementation of key interventions that have been identified in the AAMP.

KEY BASELINE ASSUMPTIONS

POLICIES

The Baseline assumes that current international as well as domestic agricultural policies will be maintained throughout the period under review (2022 – 2031). In a global setting, this implies that all countries adhere to bilateral and multilateral trade obligations, including WTO commitments, an important consideration given the ongoing war in Ukraine and some of the trade restrictions imposed during the current crisis. It also implies that countries adhere to stated objectives related to biofuel blending mandates. On the domestic front, current policies are assumed to be maintained.

With the deregulation of South Africa's agricultural markets in the mid-nineties, many non-tariff barriers to trade and some direct trade subsidies to agriculture were replaced by tariff barriers. In the case of maize and wheat, variable import tariffs were introduced. The variable import tariff for wheat was replaced by a 2% ad valorem tariff in 2006. However, in December 2008 the original variable import levy system was re-introduced, and the reference price that triggers the variable import levy on wheat was adjusted upwards from $157/tonne to $215/tonne. Following the sharp increase in world price levels in 2012, the industry submitted a request for a further increase in the reference price, which was accepted in 2013, increasing the reference price to $294/tonne. Having initiated a review of the tariff structure in April 2016, ITAC adjusted the reference price downward to $279 in 2017. The annual quota of 300 000 tonnes of wheat that can be imported duty free from the EU from 2017 onwards has also been incorporated into the Baseline.

Global maize prices have traded significantly higher than the reference price in recent years and international prices are not projected to fall below the reference price of $110 per tonne over the next decade. Consequently, no maize tariff is applied over the Outlook. In contrast, wheat prices have fallen well below the reference price and consequently the import duty on wheat was already triggered in 2015, and only exceeded the reference price again in 2021. Projections for the global wheat price suggest that the tariff will come into play again in 2024 and remain in place over the rest of the Outlook as the projected world price for wheat remains below $279/tonne. Ad valorem tariffs are applied in the case of oilseeds. For meat and dairy products, a combination of fixed rate tariffs and/or ad valorem tariffs are implemented.

General duties on imported chicken were increased substantially in October 2013; however a significant share of imports originate from the European Union and therefore carry no duty under the original Trade, Development and Cooperation Agreement (TDCA), which was later replaced by the new Economic Partnership Agreement (EPA). Furthermore, South Africa applies anti-dumping duties of R9.40 per kilogram on bone-in chicken pieces originating from the United States. In June 2015 it was announced that this anti-dumping duty would be removed for a quota of 65 000 tonnes of bone-in portions. On bone-in portions originating from the EU, South Africa applied a safeguard duty, which was introduced in 2018 at 35.3%. The safeguard has declined annually and was fully phased out by March 2022. In 2020 the general duty on bone in portions was increased from 37% to 62%, while the general duty on boneless cuts was increased from 12% to 42%. The projected tariff levels, as derived from the FAPRI projections of world commodity prices, are presented in Table 1.

South Africa's horticulture sector, as a net exporter, is influenced by policies in the global trade arena. Baseline

Table 1: Policy Assumptions

	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
R/tonne										
Maize tariff: (Ref. price = US$ 110)	0	0	0	0	0	0	0	0	0	0
Wheat tariff (Ref price = US$ 279)	0	0	125	350	360	371	382	394	405	418
Wheat tariff (300 000 tonne quota: EU Origin)	0	0	0	0	0	0	0	0	0	0
Sunflower seed tariff: 9.4 % of fob	1080	935	763	821	798	841	841	873	876	909
Sunflower cake tariff: 6.6 % of fob (4.95% for MERCUSOR origin)	274	252	249	271	266	280	277	279	269	271
Sorghum tariff: 3 % of fob	130	117	101	104	106	110	114	118	121	124
Soybean tariff: 8 % of fob	786	685	605	628	637	658	672	688	695	702
Soybean cake tariff: 6.6 % of fob (4.95% for MERCUSOR origin)	463	352	257	267	273	287	295	301	300	305
Tonnes										
Cheese, TRQ quantity	1199	1199	1199	1199	1199	1199	1199	1199	1199	1199
Butter, TRQ quantity	1167	1167	1167	1167	1167	1167	1167	1167	1167	1167
SMP, TRQ quantity	4470	4470	4470	4470	4470	4470	4470	4470	4470	4470
WMP, TRQ quantity	213	213	213	213	213	213	213	213	213	213
Percentage										
Cheese, in-TRQ	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0
Butter, in-TRQ	15.8	15.8	15.8	15.8	15.8	15.8	15.8	15.8	15.8	15.8
SMP, in-TRQ	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2
WMP, in-TRQ	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2
c/kg										
Cheese, above TRQ rate	500	500	500	500	500	500	500	500	500	500
Butter, above TRQ rate	500	500	500	500	500	500	500	500	500	500
SMP, above TRQ rate	450	450	450	450	450	450	450	450	450	450
WMP, above TRQ rate	450	450	450	450	450	450	450	450	450	450
Beef tariff: max(40 %*fob,240c/kg)	3135	2798	2804	2885	2998	3115	3231	3359	3492	3596
Lamb tariff: max(40 %* fob,200c/kg)	3323	3393	3515	3674	3829	4017	4189	4370	4551	4688
Chicken tariff (Whole frozen): 82%	2328	2117	2219	2321	2424	2531	2627	2724	2827	2912
Chicken tariff (Carcass): 31%	140	124	125	128	129	131	132	133	134	134
Chicken tariff (Boneless Cuts): 42%	1365	1242	1302	1361	1422	1485	1540	1597	1658	1708
Chicken tariff (Offal): 30%	230	209	219	229	239	250	259	269	279	287
Chicken tariff (Bone in portions): 62%	836	761	797	834	871	909	944	979	1016	1046
Chicken tariff: EU Origin	50	0	0	0	0	0	0	0	0	0
Pork tariff: max (15 %* fob, 130c/kg)	368	380	395	404	411	422	430	440	448	461

assumptions reflect no changes in this environment, with current tariffs imposed by key trading partners maintained over the projection period. This implies that South Africa continues to face a more stringent tariff environment than some of its competitors in key Asian markets. While the tariff environment is more favourable in the EU thanks to the EPA, it must be noted that South African producers are facing increasingly stringent Sanitary and Phytosanitary requirements – such as the new cold chain requirements recently imposed on citrus exports due to perceived risks around False Coddling Moth.

MACRO-ECONOMIC ASSUMPTIONS

To some extent, the Baseline simulations are driven by the outlook for a number of key macroeconomic indicators. Projections for these indicators are mostly, but not exclusively, based on information provided by the OECD, the IMF and the BER. COVID-19 caused widespread turmoil and sent shockwaves through the global economy in 2020. It brought with it widespread uncertainty, risk appetite amongst investors declined and many emerging market currencies depreciated sharply. As one of the most frequently traded emerging market currencies, the Rand was no exception. As global economies locked down and movement restrictions were imposed, oil prices declined sharply, to as low as $28 per barrel of Brent Crude. However, much has changed since. Restrictions eased in 2021 as vaccine rollouts around the world gathered momentum. Governments, particularly in higher income economies, invested in supporting a recovery and rolled out multiple stimulus packages. Consequently, in 2021, the global economy grew by almost 6% - well beyond initial expectations.

In 2022 however, new headwinds have emerged. While strategies around most of the world have changed with respect to managing COVID-19, many remnants of the 2020 crisis remain. Supply chains around the world are still struggling to catch up, timely shipping and logistics remain a challenge and costs have increased exponentially in the face of limited container availability. China continues to follow a zero-COVID policy and as new waves of the pandemic hit, large cities such as Shanghai spent weeks in lockdown. This is impacting negatively on China's growth prospects and has also exacerbated shipping and logistics challenges around the world. To add further fuel to the fire, Russia's invasion of Ukraine in February 2022 and subsequent sanctions imposed by many countries has created a crisis in energy markets. Natural gas prices increased sharply and Brent Crude oil, was trading at around $110 per barrel in July 2022. This has contributed to inflation, which was already rising prior to the war, and diminished global growth prospects, leading to real concern around a prolonged period of stagflation.

South Africa has not been immune to the headwinds in the global economy. While it is benefiting from strong commodity prices, of which it is a net exporter, it is also a net importer of oil. As prices continue to rise and global uncertainty drives a weakening of the Rand, fuel prices have reached record levels. This has compounded pre-existing challenges and by mid-2022 South Africa was on track for a record year of load shedding (rolling blackouts). While economic growth did rebound in 2021, the situation at Eskom is increasingly restricting any prospects of an accelerated recovery, and unemployment remains a major challenge. Added to the less supportive global environment, these factors all contribute to growth of only 2.4% in 2022, despite the benefit of high commodity prices. With inflation also rising, South Africa could face the same stagflation challenge in the near term. Over the medium term, as the global situation normalises and support from high commodity prices diminish, growth is expected to slow further to an average of just under 2% per annum. This is well below the targets established under the NDP and insufficient to meaningfully reverse unemployment.

The exchange rate represents one of the most important assumptions affecting agricultural markets, both through the cost of inputs as well as the pricing of several outputs. It is also one of the macro-economic variables that has been exceptionally volatile in recent years, influenced by economic performance, political sentiment, perceived country risk, as well as a number of global factors, where the Rand remains one of the most traded emerging market currencies. Following the sharp depreciation in 2020, 2021 saw a stronger than initially expected recovery, but the uncertainty in global markets combined with persistent structural challenges in South Africa's economy resulted in further depreciation in 2022. By early July, when load shedding reached stage 6, it was fluctuating around R16. Nevertheless, the currency remains exceptionally volatile and considering longer term market fundamentals, risk and debt levels, it is still expected to depreciate steadily over the medium term to exceed R20 to the dollar by 2031. Should the depreciation be more severe, it would result in higher price levels, as well as an increase in the cost of major inputs relative to the baseline. Conversely, a stronger exchange rate would reduce both the cost of inputs and the price of outputs relative to the baseline.

Table 2: Key Macro-Economic Assumptions

	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Millions										
Total population of SA	60.3	61.0	61.6	62.1	62.7	63.3	63.8	64.3	64.8	65.4
SA cents per foreign currency										
Exchange rate (SA cents/US$)	1534	1590	1639	1685	1734	1786	1840	1895	1952	2010
Exchange rate (SA cents/Euro)	1710	1797	1878	1949	2019	2087	2150	2215	2281	2349
Percentage change										
Real GDP per capita	1.32	0.77	0.90	1.04	1.08	1.01	1.04	1.07	1.09	1.09
Consumer Price Index	6.10	4.70	4.90	4.70	4.70	4.00	4.50	4.50	4.50	4.50
Percentage										
Weighted prime interest rate	8.1	9.3	9.7	9.8	9.8	9.8	9.8	9.8	9.8	9.8

Another factor with significant influence on producers' input cost structure is the price of Brent Crude oil. This typically influences the cost of both fuel and fertiliser but can also influence international commodity market prices through biofuel markets. Prices have increased sharply amid the ongoing war by Russia against Ukraine, but in the medium term under the baseline equilibrium oil prices are expected to fluctuate between $70 and $75 per barrel (Figure 8). Under this assumption, combined with consistent depreciation in the exchange rate, key inputs such as fuel and fertiliser prices are expected to increase consistently over the baseline period (Figure 8).

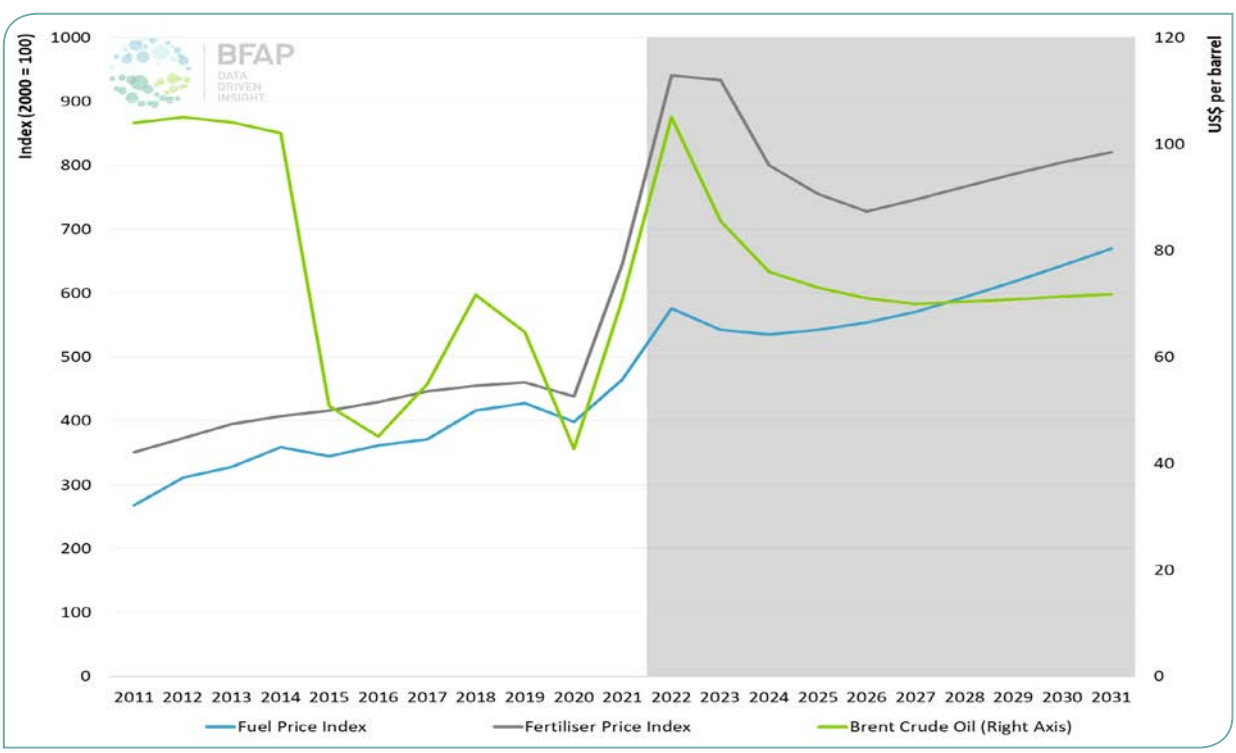
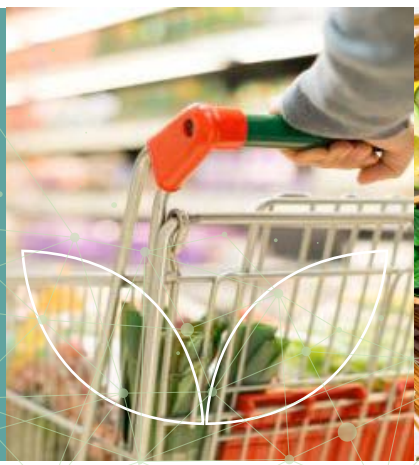


Figure 8: Oil price assumption and input cost implication
Source: OECD, IMF, BER and BFAP (2022)

SOUTH AFRICAN CONSUMER PROFILE

This chapter presents an overview of the South African consumer landscape, which underpins the modelled projections presented in the 2022 edition of the BFAP Baseline, and sheds light on dynamic changes in the socio-economic environment.

THE SOUTH AFRICAN SOCIO-ECONOMIC CONSUMER SPECTRUM

The socio-economically disaggregated view of South African consumers presented in this section is based on three main lifestyle clusters or segments: Low-income, middle-income and affluent consumers. Figure 9 presents a summary of the more prominent characteristics that distinguish these three lifestyle clusters. Rising socio-economic status is characterised by rising household income, higher education levels, decreasing unemployment, increasing urbanisation, increasing dietary diversity, a higher food expenditure per capita and a lower share of total household budget allocated to food.

Figure 10 presents the socio-economic distribution in South Africa on a provincial level. The dominant locations of the various socio-economic sub-groups are:

- Affluent: Gauteng > Western Cape > KwaZulu-Natal;
- Upper middle-income: Western Cape > Gauteng > Northern Cape;
- Lower middle-income: Free State > Northern Cape > North-West;
- Low-income: Limpopo > Eastern Cape > Mpumalanga > Northern Cape.

HOUSEHOLD INCOME

According to data from the South African Reserve Bank, the average per capita disposable income of households (the amount of money available to a household after accounting for income taxes) increased by 59.2% in nominal terms, but only 0.2% in real terms (accounting for inflation) from 2011 to 2021 (Figure 11). Following a gradual real positive growth trend from 2011 to 2019, the per capita disposable income of households declined by 4.0% in real terms from 2019 to 2020, largely due to COVID-19 pandemic related economic pressure, before recovering by 8.5% towards 2021. The pressure on household income from the COVID-19 pandemic was also confirmed by national consumer research from the Centre for Social Development in Africa at the University of Johannesburg in November / December 2020 (n=3 469) showing that 58% of South African adults perceived that "The Covid-19 pandemic has a negative impact on the income of my household".

South Africa is known for significant income inequality, with a Gini coefficient of 0.65 (Stats SA Living Conditions Survey 2014/2015). BFAP estimates based on household income levels reported by the Marketing All Product Survey (MAPS) of the Marketing Research Foundation, indicate that in 2021 the least affluent third of the South African population earned approximated 25% of total income, while the most affluent third of the population earned more than 60% of total household income.

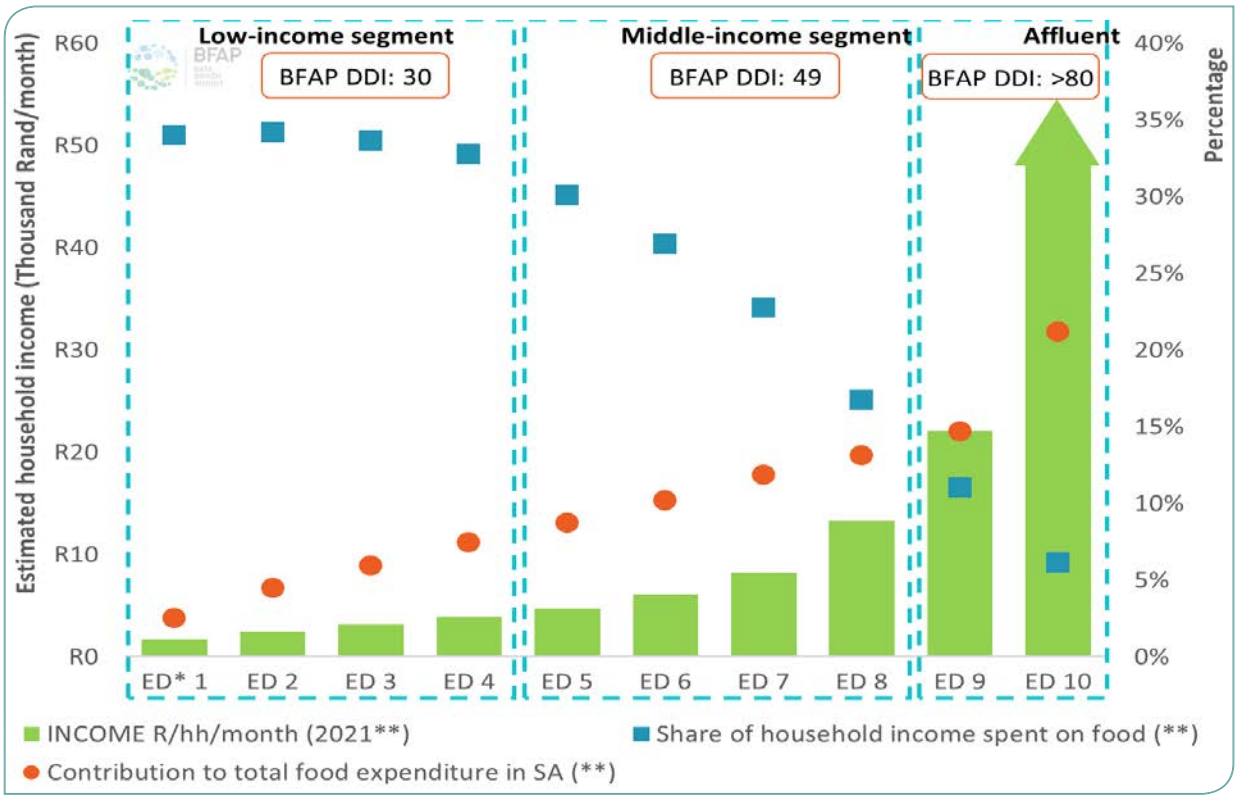


Figure 9: An overview of the South African consumer spectrum

Source: BFAP estimations based on Stats SA Living Conditions Survey 2014/2015 & Establishment Survey SEM segments[2] 2017 & 2019 (inflation adjusted to 2021 values).

NOTES:

(*) Each Expenditure Decile (ED) represents 10% of the households in South Africa.

(**) Calculated estimates.

BFAP DDI = BFAP Dietary Diversity Indicator: Refers to the number of food items accounting for 80% of food expenditure

As reported in the 2021 BFAP Outlook, the Establishment Survey indicated that from 2017 to 2019, lower-income households followed by middle-income households experienced the most significant positive nominal and real income growth – thus pointing towards less inequality for that time period.

Figure 12 compares household income in 2017[3] to that of 2021[4] from a SEM-based, socio-economically disaggregated perspective. The data suggests that over the past half a decade, positive nominal income growth was limited to the low-income segments within the South Africa population (characterised by household income levels of less than R6 000 per month) – partly driven by increased social grant support. Negative nominal income growth was progressively worse with rising income levels. These observations could be attributed to a number of possible reasons, including the migration of high net-worth households out of the country, a tendency over the last few years, which were tough economically, to allocate market-related annual salary increases to lower-level employees and smaller increases to management-level employees, or possible tendencies of under-reporting of incomes amongst more affluent households due to the sensitive nature of household income data and the possible under-sampling of very high income households.

[2] As reported by the Broadcast Research Council of South Africa (BRC).

[3] Obtained from Establishment Surveys (ES) published by the Broadcast Research Council (BRC) of South Africa.

[4] Obtained from the Marketing All Product Survey (MAPS) of the Marketing Research Foundation (MRF).

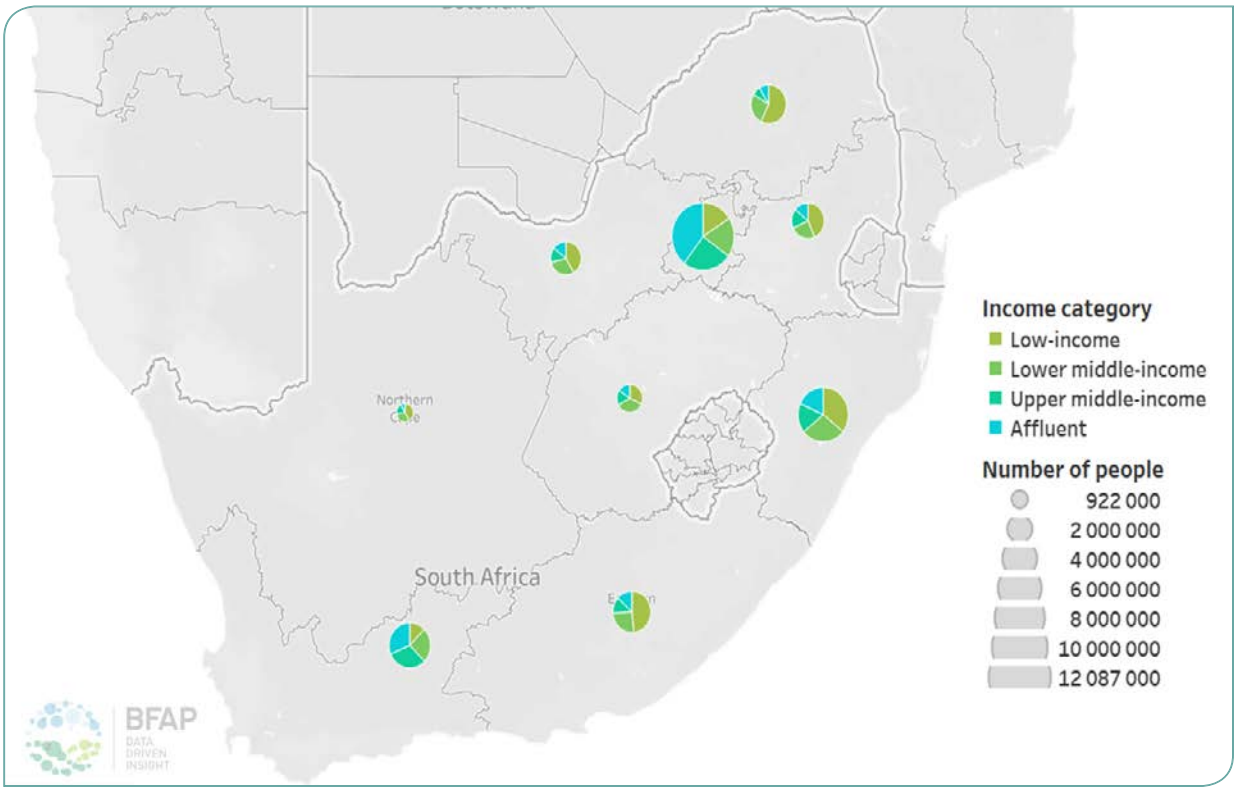


Figure 10: Provincial distribution of the main socio-economic sub-groups in South Africa

Source: BFAP calculations based on data from the Marketing All Product Survey (Marketing Research Foundation, 2021)

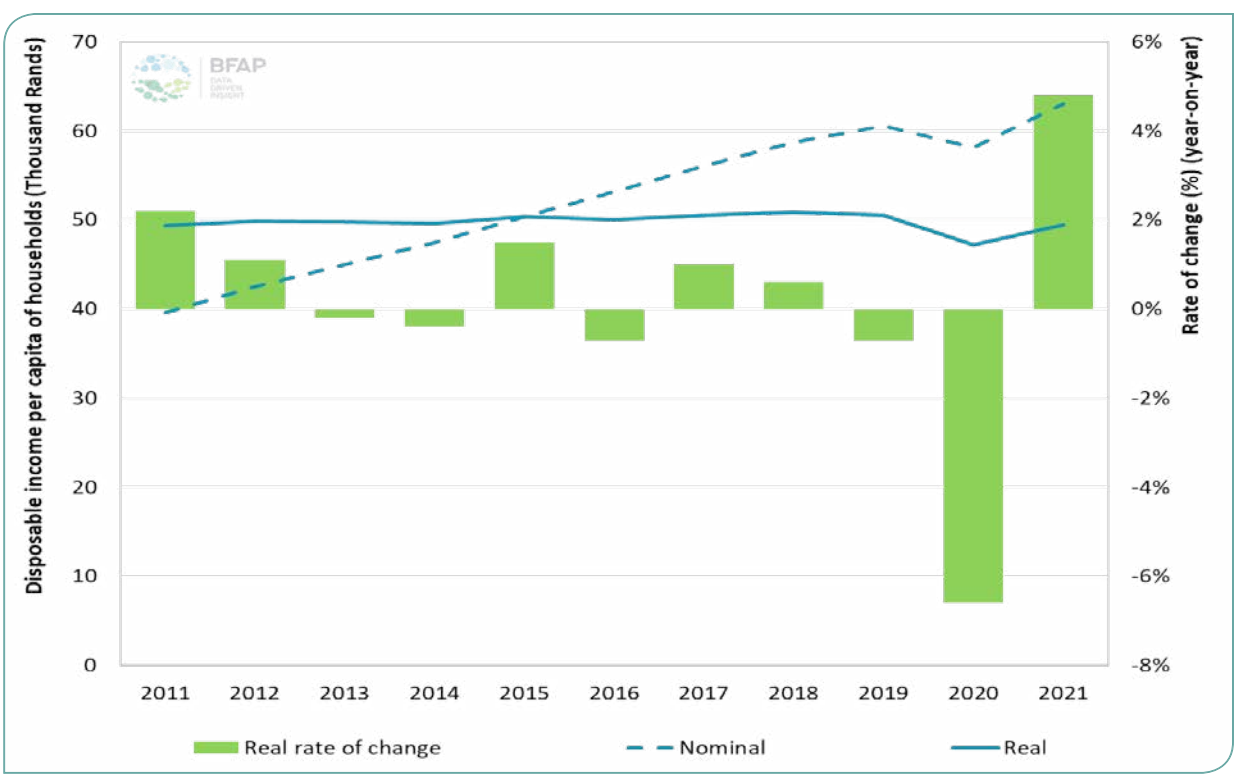


Figure 11: Disposable income per capita of household in South Africa from 2011 to 2021

Source: South African Reserve Bank, 2022

Going forward, positive and meaningful improvement in the Gini-coefficient would however also require positive income growth among lower-middle class and upper-middle class households.

According to the latest StatsSA General Household Survey (2020), the dominant income sources of households in South Africa was salaries / wages followed by grants. From 2019 to 2020 the percentage of SA households who received income from salaries, businesses and remittances decreased, along with higher grant dependency (Figure 13) – as could be expected within the context of the COVID-19 pandemic.

In South African the dominant type of social support grant is the Child Support Grant, which represented 70% of grants paid in 2020/2021 by SASSA, followed by Old Age Grants (20%). According to the 2020 Stats SA General Household Survey, grants contributed to the income stream of the largest share of households in the Limpopo province (69.3% of households), Mpumalanga (64.9%), Eastern Cape (63.6%) and Free State (60.2%).

CLASS MOBILITY

Class mobility, defined as the movement of consumers to higher socio-economic groups, has been a key feature of the South African consumer landscape for many years and has been detailed in previous Baseline publications. However, the socio-economic impacts of the COVID-19 pandemic, combined with other pressure factors such as high food prices and a challenging economic climate in general, were expected to cause a significant slow-down in class mobility. From 2020 to 2021 the share of the South African population within the low-income socio-economic group decreased by approximately 5%, while the lower middle-income group increased by approximately 22%. However, the share of the South African population within the upper middle-income and affluent socio-economic groups also decreased from 2020/2021 (Figure 14) – thus showing negative class mobility among the two more affluent socio-economic groups from 2020 to 2021.

Figure 12: Socio-economically disaggregated household income comparison – 2017 versus 2021

Source: BFAP estimates based on BRC & MRF data

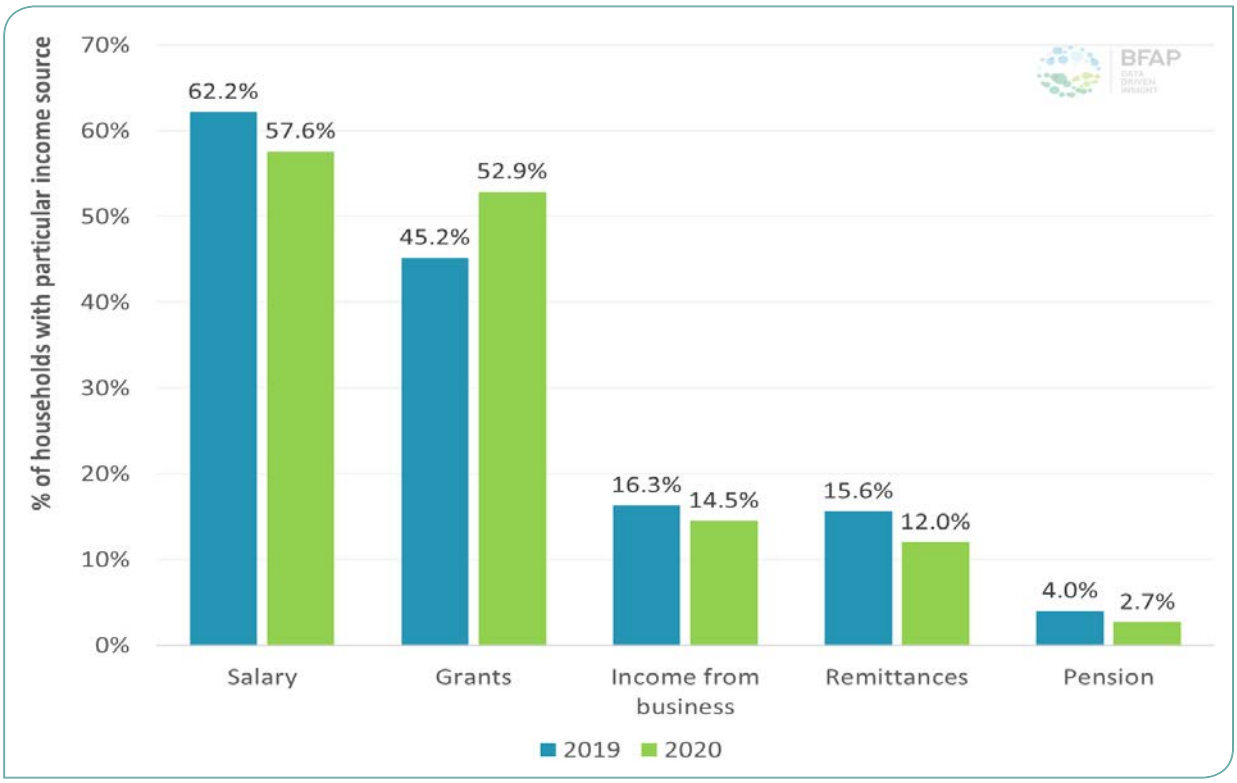


Figure 13: Sources of household income in South Africa for 2019 and 2020
Source: Stats SA General Household Survey 2020

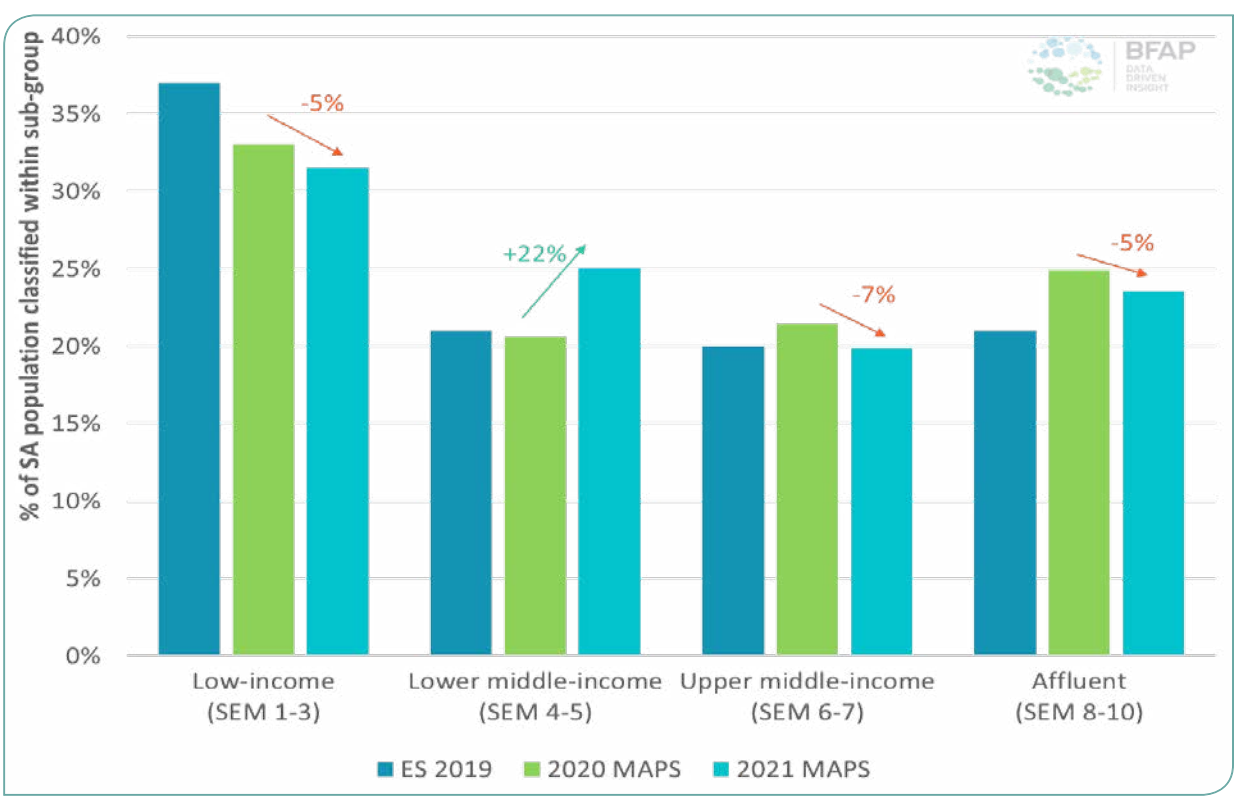


Figure 14: Class mobility in South Africa from 2019 to 2021
Source: BFAP estimations based on BRC & MRF data

HOUSEHOLD SIZE AND COMPOSITION

Over the past two decades the average household size in South Africa decreased by approximately one person to 3.4 members per household (Stats SA General Household Survey 2020), with larger households typically residing in provinces such as the Eastern Cape, KwaZulu-Natal and Limpopo. From a food security perspective a smaller household size could be positive, considering that the total available household income has to support fewer members. Furthermore, a larger number of smaller (economically active) households could help to stimulate economic growth by creating demand. However, among vulnerable households, a larger number of smaller households could put pressure on public housing resources. A larger number of smaller households could also result in a society with a higher environmental impact.

From a generational perspective, household composition in South Africa is dominated by double generation households (i.e. parents and children), followed by single person households, triple generation households (i.e. grandparents, parents and children) and single generation households (partners or siblings living together) (Figure 15). Data from 2018 to 2020 indicate an increasing trend for double- and triple generation households, along with decreasing trends for the other typologies. In 2020 the rural population had a significantly larger share of skip- and triple generation households – implying pressure on social support systems for vulnerable households within these categories. In general, multi-generational households and female-headed households tend to have the most significant risk exposure in terms of food security.

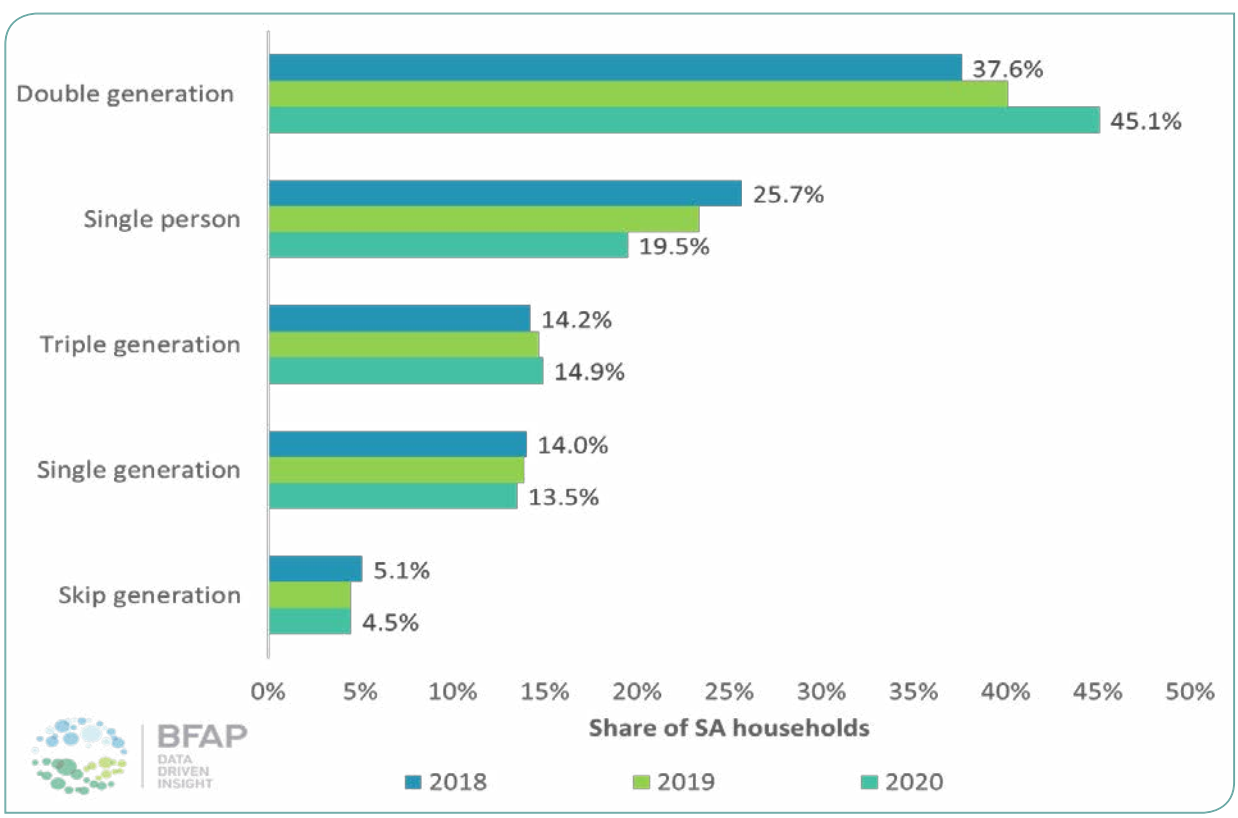


Figure 15: Household composition typologies in South Africa for 2018 to 2020
Source: Stats SA General Household Survey 2020

URBANISATION

At national level, a trend of increasing urbanisation is observed over time – as is illustrated by the share of population residing in urban areas:

2001: 58% *(Stats SA Census 2001)* → **2022:** 68.3% *(UN World Urbanisation Prospects)* → **2030:** 72.1% *(UN World Urbanisation Prospects)* → **2050:** 79.8% *(UN World Urbanisation Prospects)*

Rising household income and urbanisation are often associated with the nutrition transition, characterised by the diversification of eating patterns such as the consumption of more animal-source foods, fats/oils and highly processed foods often containing high quantities of sugar and refined carbohydrates. From a public health perspective, the nutrition transition is associated with the increased incidence of overweight, obesity and non-communicable diseases such as diabetes and heart disease.

The provincial migration patterns (Figure 16) estimated in the Stats SA Mid-year Population Estimates 2021 also support the notion of continued urbanisation in South Africa, with the most urbanised provinces having the largest positive net migrations (Gauteng followed by the Western Cape), while the least urbanised provinces in South Africa had the largest negative net migrations (Eastern Cape, followed by Limpopo and KwaZulu-Natal).

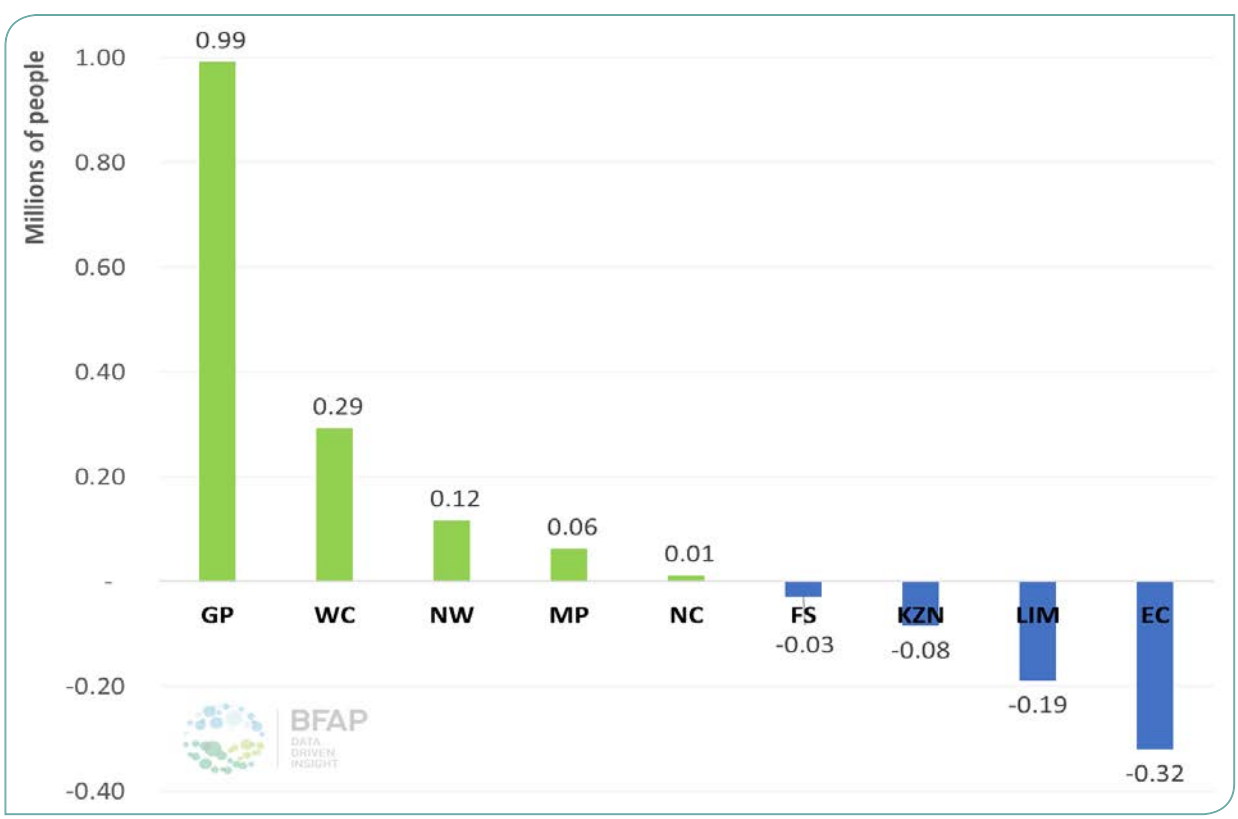


Figure 16: Provincial migration trends in South Africa's population: 2016-2021
Source: Stats SA Population Estimates, 2021

BOX 2: HOW DOES THE FOOD EXPENDITURE PATTERNS OF LOW-INCOME HOUSEHOLDS DIFFER IN RURAL AND URBAN SETTINGS?

Table 3 presents a high-level comparative overview of the food expenditure patterns of low-income rural and urban consumers, based on the latest available nationally representative household expenditure study for South Africa (Stats SA LCS 2014/2015). Compared to low-income households in rural areas, low-income households in urban areas typically spend more per capita on higher-cost starch-rich foods (e.g. bread and processed products), various animal-source foods, more sophisticated dairy products, a larger variety of fruits, a larger variety and more sophisticated vegetables, aerated and sugar-sweetened beverages and condiments (sauces/spices). Thus, the purchasing of more animal-source and processed foods, even among low-income households in an urban setting are particularly evident from Table 3.

Table 3: Rural versus urban food expenditure patterns among low-income households

Food group:	Rural low-income households:	Urban low-income households:
	Food items with a higher per capita expenditure:	
Starch-rich foods	Maize meal, wheat flour, rice, samp, sorghum	Bread, pasta, processed breakfast cereals, processed baked goods
Meat, fish, eggs	Mopani worms	Beef, chicken, pork, sheep meat, canned fish, polony, viennas, eggs
Dairy	Powdered milk, long-life full-cream milk, plain yoghurt Whiteners (not real dairy)	Fresh milk, flavoured yoghurt, maas, cheese, pre-prepared custard
Fats / oils	Plant oils, yellow brick margarine, cooking fats	Peanut butter, medium-fat margarine and butter
Fruit	Orange, mango, avocado	Banana, apple, grape, peach, pear
Vegetables	Atchaar, sweet potato, spinach, green mealies, cabbage, green beans	Tomato, onion, potato, pumpkin, carrot, cucumber lettuce, beetroot, processed vegetables
Legumes	Dried beans, soy products	Baked beans, butter beans, lentils
Sugar-rich foods	Granular sugar, jam, sweets	Chocolate
Non-alcoholic beverages	Tea	Aerated cold drinks, fruit juices, instant coffee, other cold drinks
Other foods	Baby food, soup powder, instant yeast, baking powder	Food hampers, sauces and seasonings

Source: BFAP calculations based on Stats SA LCS 2014/2015

AGE DISTRIBUTION

Notable dynamics within South Africa's population age distribution include:

- South Africa has a gradually aging population, with the median age increasing from 25.0 in 2010, to 27.6 in 2020 and expected to be 29.6 in 2030 according to UN Population Prospects.
- From 2021 to 2030, the expectation is that the most significant growth will occur among Generation X (aged 41 to 56 in 2021) (+3.3m people, or +33%), followed by the older generations (aged 57 plus) (+7.8m people, or +23%) and Generation Z (aged 10 to 24) (+1.8m people, or+12%). Over the next 15 years the latter group will gradually enter the work force, increasing the need for adequate job creation.

UNEMPLOYMENT

From the fourth quarter of 2011 to the fourth quarter of 2021, the South African labour force increased by 3.67

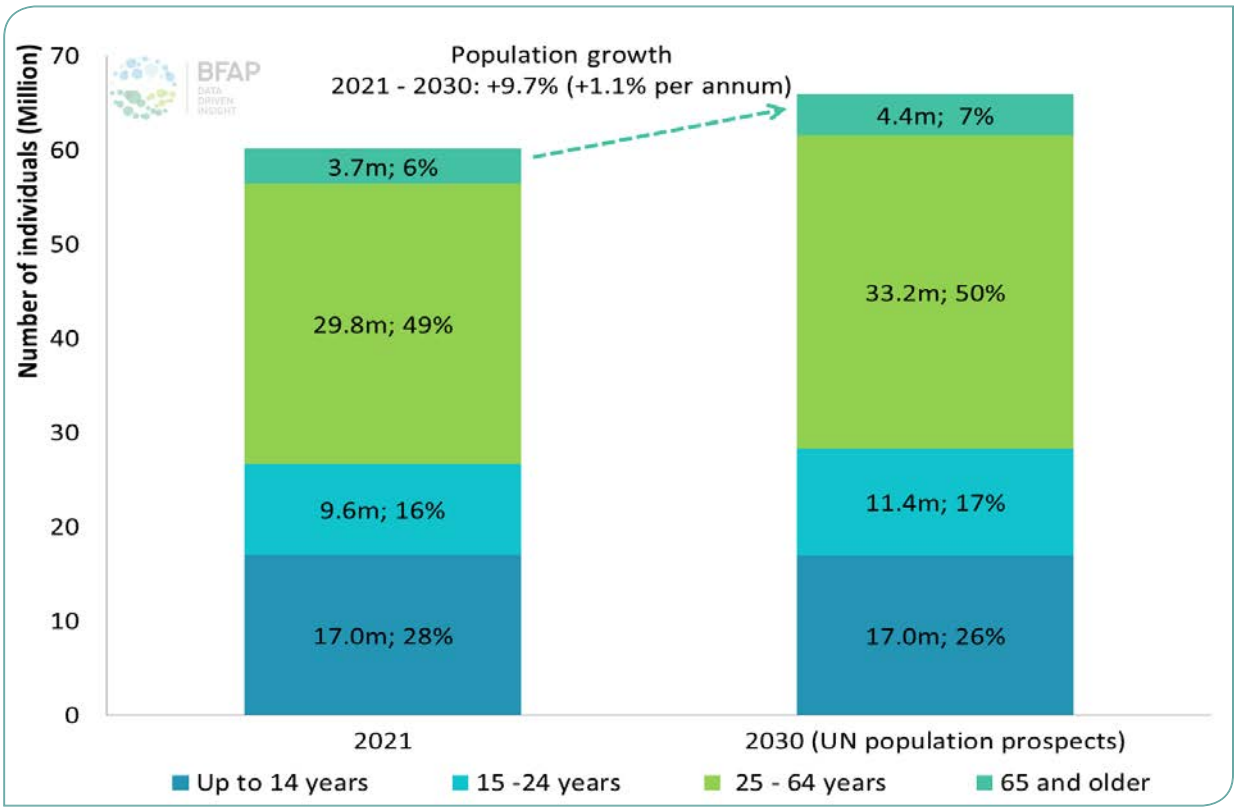


Figure 17: Age structure dynamics in South Africa – comparing 2010, 2020 and 2030 projections

Source: Stats SA Mid-year Population Estimates, 2021; UN Population Prospects, 2019

million individuals (+19.5%), while the number of employed increased by only 208 000 (+1,4%) and the number of unemployed increased by 3.45 million (+77.3%). The unemployment rate for South Africa, as reported by Stats SA in the fourth Quarterly Labour Force Survey of 2021, was 35.3%, representing the highest value since the start of the Quarterly Labour Force Survey in 2008. Table 4 presents further trends on unemployment in South Africa.

Table 4: Disaggregated trends in South African unemployment – comparing Q4 2011 to Q4 2021

Category	Variable	Unemployment rate in Q4 2021		Ten-year increase in unemployment	
		Highest	Lowest	Highest	Lowest
Age	Unemployment rate among active working age population	25 – 34 years (44%) 35 – 44 years (30%)	55 – 64 years (11%) 45 – 54 years (23%)	45 - 54 years (+85%) 55 – 64 years (+78%) 34 – 44 years (+70%)	25 – 34 years (+55%)
Province	Provincial unemployment rate	EC (45%) MP (40%) FS (37%) GP (37%)	NC (25%) WC (28%) KZN (32%)	KZN (+73%) EC (+68%)	NC (-11%) NW (+19%) WC (+22%)

Source: Stats SA Quarterly Labour Force Survey – Q4 2021

DEBT

Over the past decade, rising indebtedness has been a key feature of the South African consumer landscape (Figure 18 and Table 5). This trend is expected to continue when considering various pressure factors on households, such as rising interest rates, high food prices and household incomes battling to keep up with inflation. Consumer research by Debt Rescue (www.debtrescue.co.za) points to a rising trend in the use of credit for basic spending like food, which could lead to an overwhelming debt-trap and dire food security consequences for many vulnerable households. The decrease in the number of accounts is a result of a consolidation of various dept accounts of individuals rather than a decrease in the total number of indebted individuals.

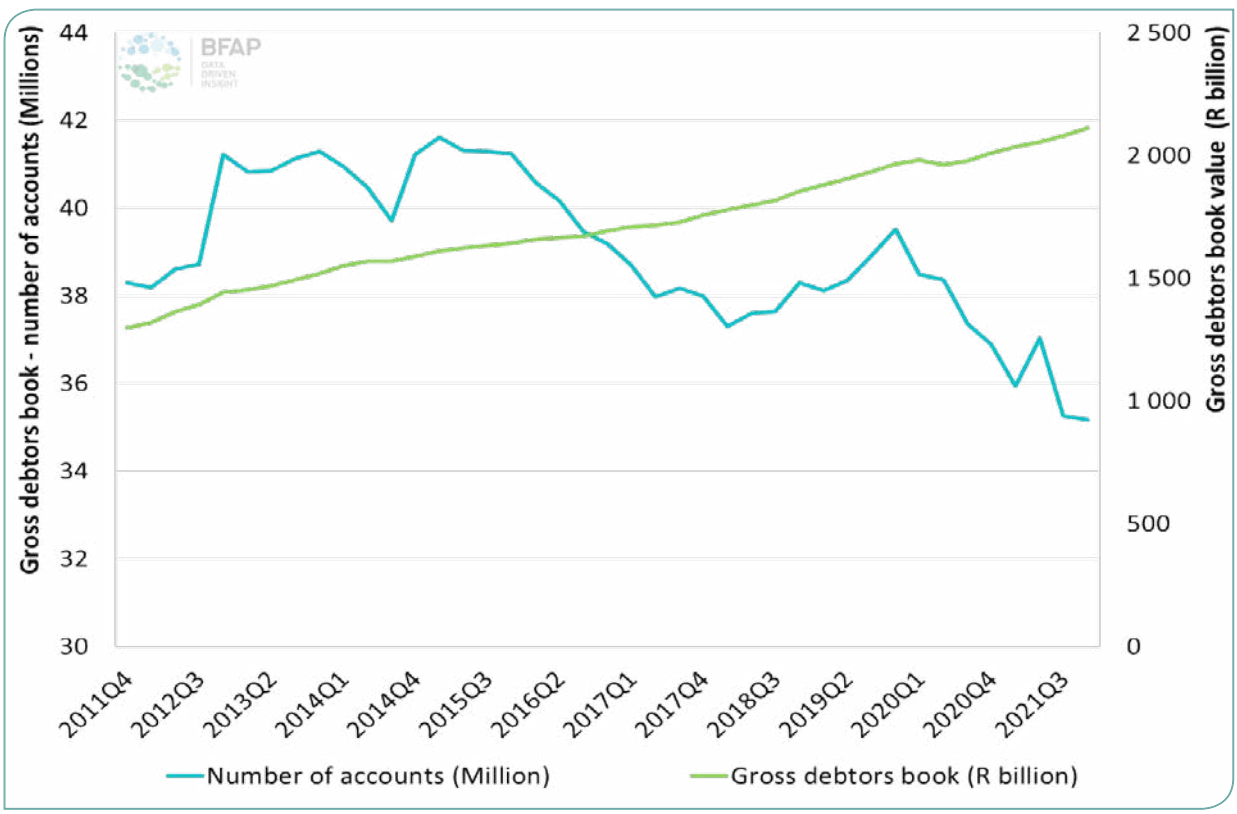


Figure 18: Consumer debt in South Africa from a gross debtor's book perspective

Source: Stats SA General Household Survey 2020

Table 5: Trends in South African consumer debt – comparing Q4 2011 to Q4 2021

Measurement:	Value – Q4 2021:	% change – Q4 2011 to Q4 2021:	Comments:
Gross debtors book - value (nominal) (Figure 18)	R2 111.5 billion	+66.0%	• Increasing trends over time. • Q4 2021 highest value in time series. • Faster growth in 2021 vs 2020: Average 2021 quarter-on-quarter change of +1.2% approximately double the growth rate of +0.6% in 2020.
Number of credit applications received	12.4 million	+27.2%	• Average 2021 value (11.4 million) similar to average 2019 value (11.5 million) following lower value of 9.04 million in 2020.

Table 5: Trends in South African consumer debt – comparing Q4 2011 to Q4 2021 (Continued)

Measurement:	Value – Q4 2021:	% change – Q4 2011 to Q4 2021:	Comments:
Credit application rejection rate	66.0%	+44.4%	• Maximum rejection rate over the last decade observed in Q2 2020 (67.4%). • Gradual increase in the rejection rate during Q1 2021 to Q4 2021.
Credit granted to consumers with an income of less than R5 500 per month as % of total value of credit granted	9.7%	-49.2%	• Q2 2020 to Q4 2020 lowest percentages observed since Q1 2018 (average 8.1%). • Increasing to an average value of 10.1% for 2021.
Credit granted to consumers with an income of less than R5 500 per month as % of total number of credit facilities granted	44.1%	-11.3%	• Average 2021 value of 42.1% lower than the average 2020 value of 43.2%.

Source: National Credit Regulator (NCR), 2021

FOOD ACCESS

The share of persons that experienced hunger[5] declined significantly from 29.3% in 2002 to a thirteen year low of 11.1% in 2019 (Figure 19). Between 2011 and 2020, the share of people with limited food access[6] was consistently higher than the share of people experiencing hunger (95% higher on a 10-year average basis), and also shows a decreasing trend over time from 25.2% in 2011 to 22.8% in 2020 (Stats SA General Household Survey, 2021).

The extent to which the COVID-19 pandemic resulted in a deterioration in food security in South African is evident from Figure 19. The pandemic and subsequent economic contraction were associated with economy-wide job losses, with a particularly negative impact on low- and semi-skilled workers, exacerbating income inequality, as well as hunger and food insecurity in South Africa.

Further evidence of the significant impact of the COVID-19 pandemic on food security is observed in the five waves of the NIDS CRAM survey in 2020/2021:

- The share of households who ran out of money to buy food (in the 'previous month') improved from 47% in March 2020 ('hard' lockdown) to 35% in March 2021.
- Household members going hungry in the 'past seven days' applied to 17% of surveyed households for the period February to May 2021, with a value of 23% reported for March 2020.
- Households where children had gone hungry because there was not enough food in the 'past seven days' applied to 14% in February to May 2021, with a high value of 16% reported for November / December 2020.

Consumer research by the Centre for Social Development in Africa in November/December 2020 (n=3 469) revealed that 46% of adults in South Africa agreed that *"Adults and children in my household often had to go hungry during the Covid-19 pandemic, as we did not have enough money for food"*.

[5] Experiencing hunger: Adults and children going hungry because there was not enough food in the household.

[6] Limited food access: Complex food access measurement based on the Household Food Insecurity Access Scale, to measure households' access to food.

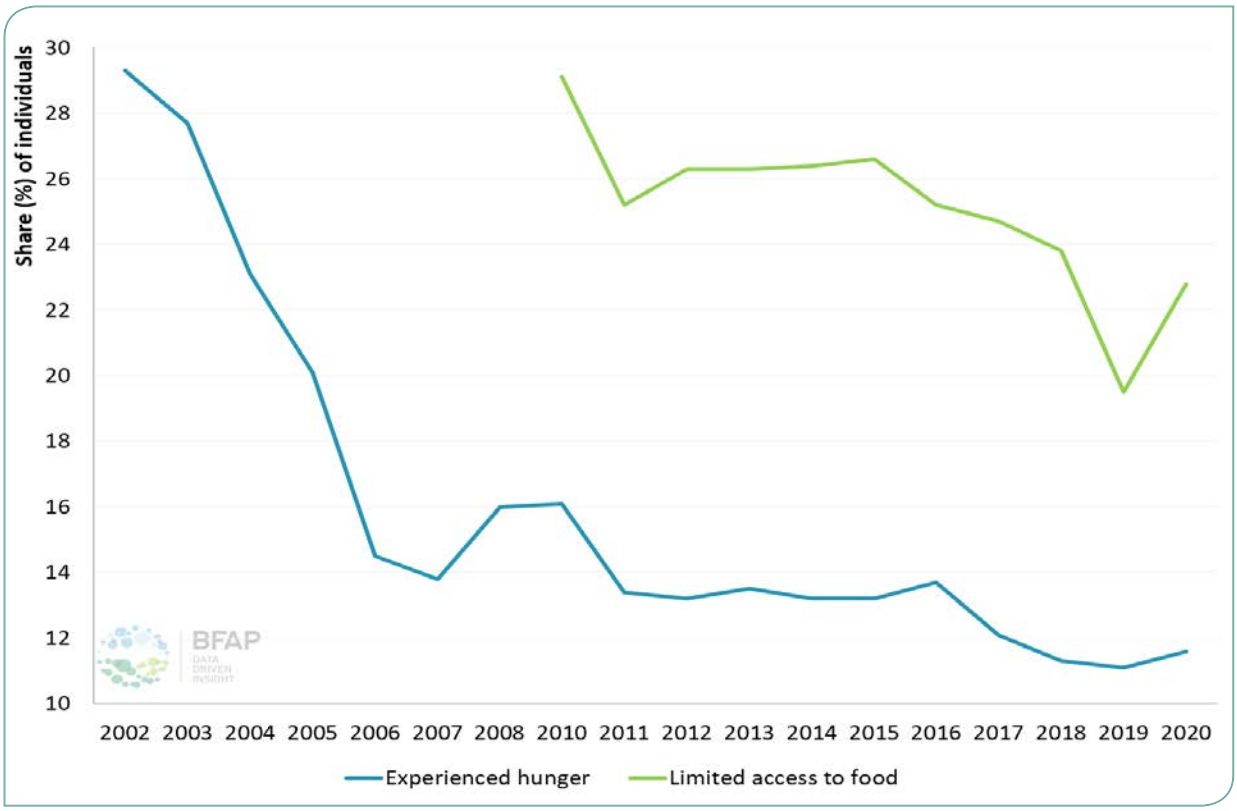


Figure 19: Individuals' vulnerability to hunger and access to food (2002 to 2020)
Source: Stats SA GHS, 2020

On a provincial level, according to the Stats SA GHS 2020, food access problems were most prevalent in the North-West province, Mpumalanga and the Eastern Cape. The study conducted by the Centre for Social Development in Africa reported the most significant incidence of hunger in KwaZulu-Natal, the Eastern Cape and the North-West province in November / December 2020.

OUTLOOK FOR FIELD CROPS
SUMMER GRAINS AND OILSEEDS

INTERNATIONAL MARKET SITUATION

The dynamism observed in global grain and oilseeds markets over the past 2 years stands in stark contrast to the relative stability of the preceding 5 year period (Figure 20). The FAO price index for both cereals and vegetable oils reached an all-time high in March 2022. This reflects the impact of a perfect storm, where the recovery in demand as COVID-19 related restrictions were lifted and China's pig herd continues to expand following previous ASF related reductions was accompanied by a range of supply constraints. These shocks came at a time when global stock levels were already trending downwards. Since mid-2020, cereal prices have increased by 75%, while vegetable oil prices rose by a staggering 191%.

Among the greatest uncertainties facing grain and oilseed markets is the ongoing war in Ukraine following Russia's invasion in February 2022. The market impact is underpinned by Russia and Ukraine's substantial combined share in global exports for commodities such as maize, wheat, barley, sunflower and sunflower oil. This was further exacerbated by the fact that it follows a period of COVID-19 related supply chain challenges and ongoing weather concerns that have reduced output expectations in South America and delayed planting progress in the USA, thus raising concerns about the Americas' ability to mitigate supply reductions from the Black Sea region. Sharp increases in input costs have added further constraints on the strength of the global supply response and in the case of vegetable oils, structural constraints such as aging oil palm plantations in Malaysia have reduced yields, while labour shortages and excessive rainfall hampered harvesting and further reduced stock levels.

Given the combination of factors that have driven prices to record levels, the outlook remains uncertain. The USDA expects that maize stocks could rise for the first time in 5 years in 2022, thanks to a 7 million hectare expansion in area planted, but weather conditions remain uncertain and as the war in Ukraine continues, production volumes remain ambiguous and markets will remain volatile. The location of stocks further adds to uncertainty, with limited confidence around China's reported levels and uncertainty as to what extent stocks held in the Black Sea region will be able to enter the market. At the same time, soybean stocks are expected to decline further in 2022, despite area expansion. Concerns about low stocks and rising prices have resulted in the imposition of export controls by many countries, adding to market volatility. All of this suggests that global stocks may require multiple seasons to replenish fully, but current price levels are set to induce

a strong supply response via expansion in area planted if sufficient fertiliser is available and weather permits. Consequently, prices are expected to decline over the next 2-3 years, but structural shifts in energy markets and the higher underlying cost structure implies that equilibrium levels are higher than those experienced between 2015 and 2019.

Amongst the products most influenced by energy markets and the renewed drive to renewable sources is vegetable oils. These markets were also amongst the most affected by the war in Ukraine, given that the combined supply of the belligerents represents more than half of global sunflower oil exports, and that palm oil production remains constrained by limited reinvestment in oil palm plantations in recent years, as noted. As a result, average vegetable oil prices are expected to trade 19% above 2019-2021 levels between 2024 and 2031.

As a non-food industry, the downturn in cotton demand in 2020 as a result of COVID-19 restrictions was bigger than most agricultural commodities (Figure 21). As economies opened, a recovery in demand induced a sharp year on year increase in cotton prices in 2021 and with global use of raw cotton expected to increase for the second consecutive year in 2022, price support is expected to be sustained in the short term, particularly in light of firm prices for competing crops. In the medium term, prices are expected to reach an equilibrium at levels similar to 2017-2019, thus supporting global production growth of 1.6% per annum over the coming decade. Demand growth is expected to remain firm, particularly in developing countries. China's use in particular has regained previously lost ground, as cotton prices have become more competitive when compared to polyester, which appears to have suffered a setback due to government measures to combat industrial pollution (OECD-FAO, 2022).

DOMESTIC MARKET SITUATION

Amid the volatility of the past few years, field crop production in South Africa thrived. A combination of expanded production area and favourable weather conditions resulted in near record maize harvests in 2020 and 2021, of 15.3 and 16.2 million tonnes respectively, with revenue further supported by rising prices globally. In 2022, the

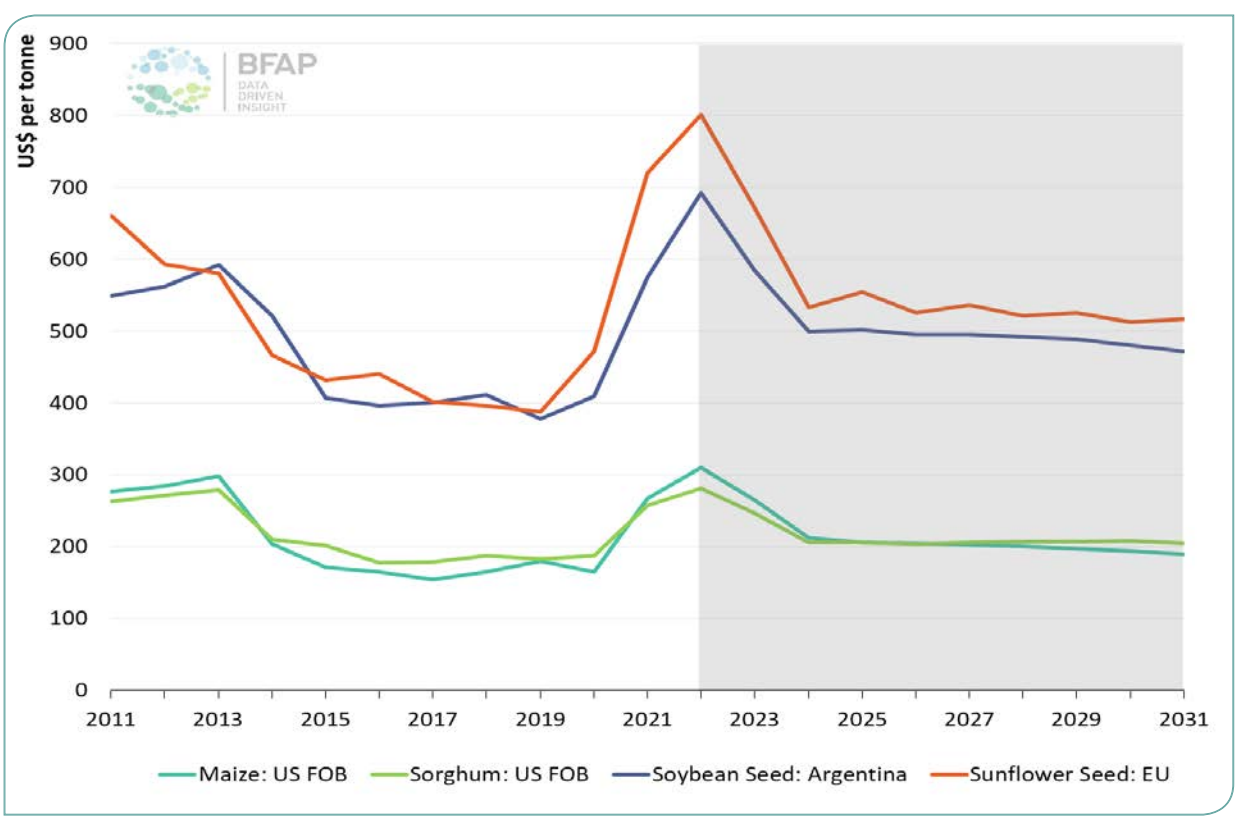


Figure 20: World prices for major summer grains and oilseeds: 2011-2031
Source: FAPRI & BFAP, 2022

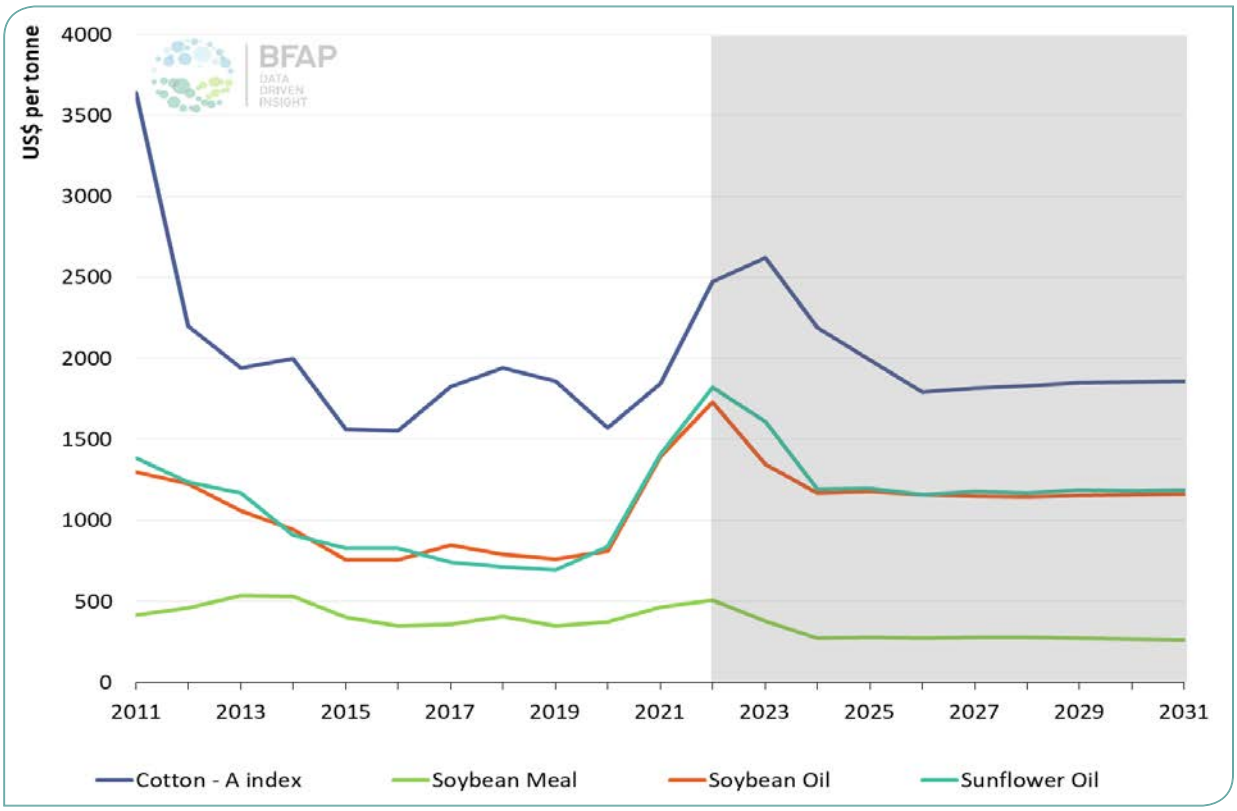


Figure 21: World prices for major secondary products
Source: FAPRI & BFAP, 2022

Crop Estimates Committee expects another strong crop of 14.7 million tonnes, which is set to be sold at record prices, even though domestic prices have traded at export parity levels for most of the past 3 years, thus supporting a 18% year on year gain in gross revenue (Figure 22). The domestic demand for maize increased, reflecting budgetary constraints particularly amongst lower income consumers, which results in a return to more basic and affordable food staples, but the production surplus was ample for exports to rise rapidly. This was particularly evident in 2021/22, as stocks were replenished by the large harvest in 2020. In light of good harvests across most of the Southern African region, exports comprised mostly yellow maize, with substantial quantities of white maize entering the animal feed market. The strong 2022 harvest is expected to yield another exportable surplus and given high prices in global markets, exports are projected to exceed 3 million tonnes for the second consecutive season (Figure 23).

While price gains derived from the international market have supported producer revenue, it also represents a concern regarding affordability of a basic food staple for South African consumers – many of which are facing severe budgetary constraints. Box 3 relates the observed and projected increases in agricultural commodity markets to the cost of a serving to the consumer, and hence its affordability.

Figure 22 shows that revenue from oilseed production also improved markedly in 2021, as soybean production reached an all-time high of 1.9 million tonnes. This follows a 17%, or 122 000 hectare expansion in the area cultivated to soybeans, which is set to increase even further in 2022 with the addition of another 98 000 hectares. Thus, while yields are expected to decline only marginally year on year, soybean production is set to reach a new record level of almost 2.1 million tonnes. In light of the sharp increases in global prices for soybeans and soybean products, domestic prices are also set to rise by 17% year on year, even as they remain at export parity levels. Contrary to the soybean sector, the area planted to sunflower declined in 2021, resulting in a smaller crop compared to 2020, but high prices still supported good revenue performance. In 2022 the combination of strong price prospects owing to global

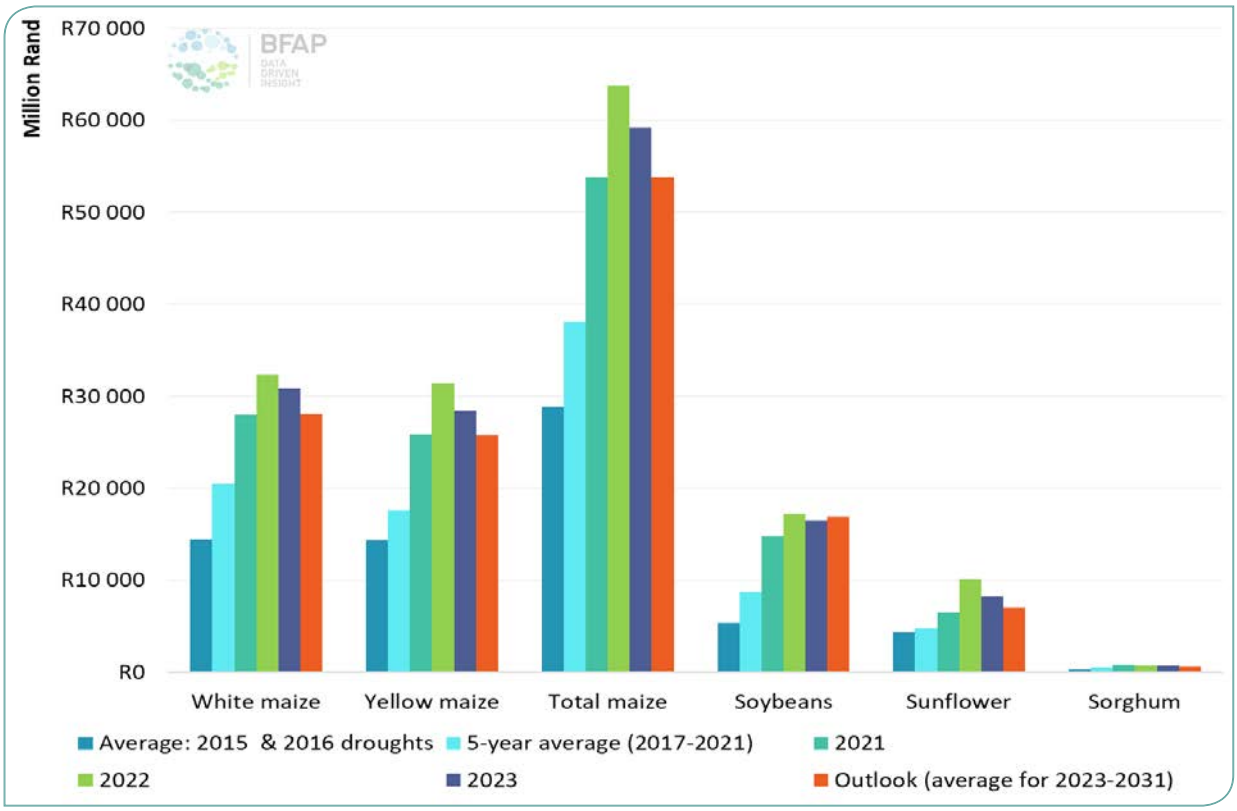


Figure 22: Gross value of production for selected summer crops in South Africa

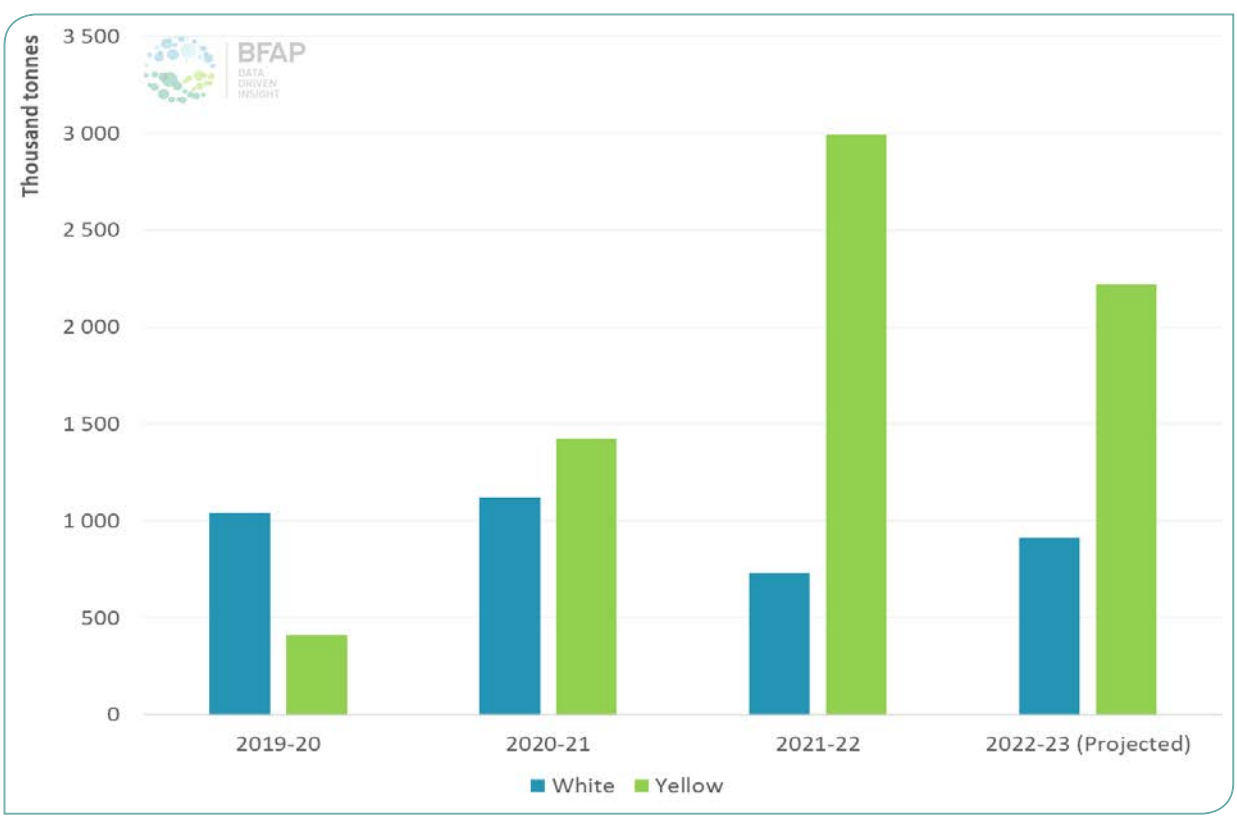


Figure 23: Maize exports from South Africa

BOX 3: A DYNAMIC VIEW ON STAPLE FOOD AFFORDABILITY

The most widely consumed grain-based staple food in South Africa is maize meal, followed by rice, brown bread and white bread. Considered in terms of the cost of a single serving unit (SSU), where a SSU refers to a single unit of a particular food within a particular food group providing a comparable amount of nutrients, maize meal is still the most affordable grain-based staple food in South Africa (Table 6). From 2019 to Q1 2022 the highest cost increases amongst major food staples were observed for cake flour (+43%), rice (+29%) and pasta (+29%), while the cost of maize meal and bread increased the least (by +17% and +16% respectively). From 2021 to Q1 2022 the affordability gap between maize meal versus rice, bread and pasta also increased in favour of maize meal (Figure 24). The only decreasing affordability gap was observed for cake flour. However, wheat flour only represents approximately 6% of total household expenditure on starch-rich foods (as estimated from Stats SA Living Conditions Survey 2014/2015 household-level food expenditure data).

Table 6: Comparing the affordability of grain-based staple foods

	2019		2020		2021		2022 Jan – Apr	Change 2019 to Q1 2022
Maize meal 	R 0.24	+1c →	R 0.25	+2c →	R 0.27	+1c →	**R 0.28**	+4c
Rice 	R 0.31	+3c →	R 0.34	+2c →	R 0.36	+4c →	**R 0.42**	+9c
Cake flour 	R 0.29	+11c →	R 0.40	+5c →	R 0.45	-3c →	**R 0.40**	+13c
Brown bread 	R 0.71	+5c →	R 0.76	+3c →	R 0.79	+4c →	**R 0.83**	+12c
White bread 	R 0.78	+5c →	R 0.84	+4c →	R 0.88	+3c →	R 0.91	+12c
Pasta 	R 0.78	+7c →	R 0.85	+9c →	R 0.94	+6c →	R 1.00	+22c

Source: BFAP calculations based on Stats SA monitored urban food retail prices & Single serving units as defined by the South African Food-based Dietary Guidelines

With rising retail price pressure on wheat-based foods in particular, the appeal of maize meal as the number one staple food choice in South Africa should remain firm. The tendency of vulnerable households to reduce the intake of meat and fresh produce in favour of staple foods to cope with financial pressure could increase households' reliance of maize meal further over the next few years. However, the relatively long cooking time of maize meal could challenge household budgets further in light of high and rising electricity costs. The substantial spread in grain-based staple food costs, ranging from R0.28/SSU for maize meal to R1.00/SSU for pasta in Q1 2022 emphasises the importance of well-informed food choices among consumers to make the most of their constrained food budgets.

BOX 3: A DYNAMIC VIEW ON STAPLE FOOD AFFORDABILITY (CONTINUED)

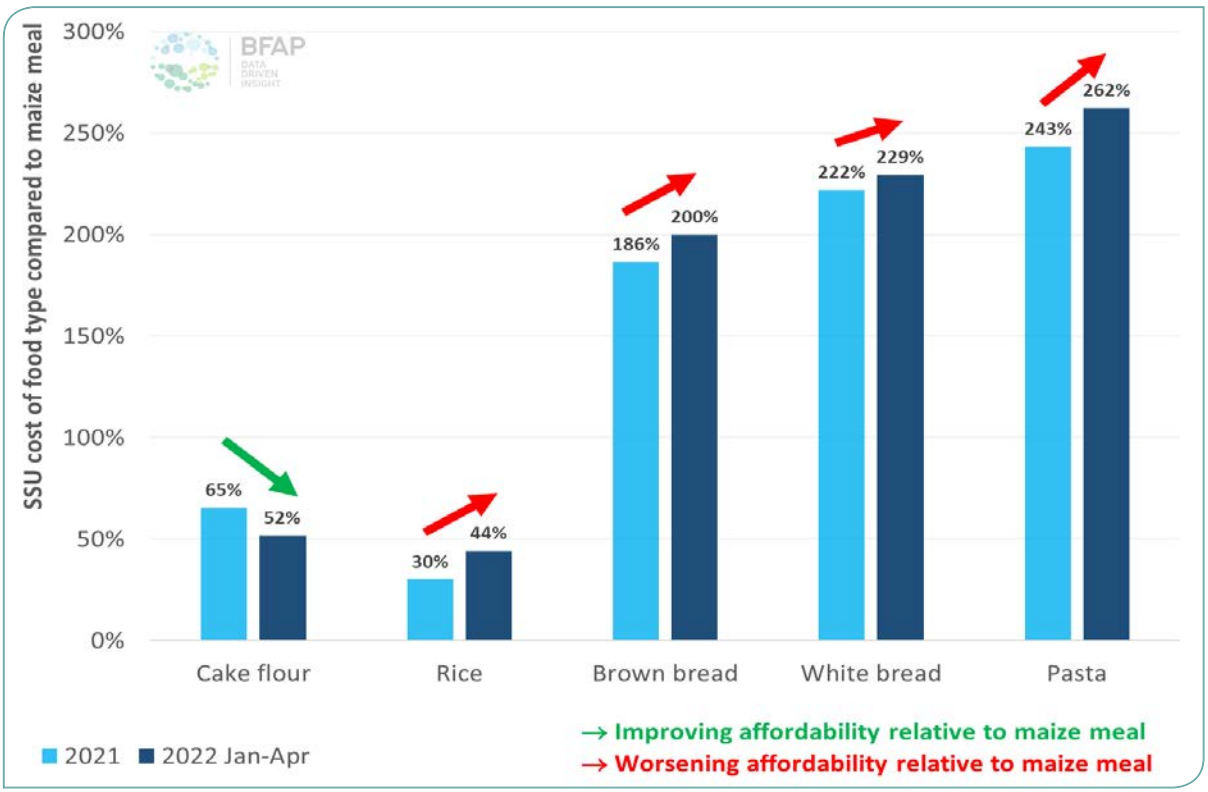


Figure 24: The affordability of cake flour, rice, bread and pasta compared to maize meal in 2021 and Q1 2022
Source: BFAP calculations based on Stats SA monitored urban food retail prices & Single serving units as defined by the South African Food-based Dietary Guidelines

market dynamics and late rains which delayed summer plantings in many regions induced a 190 000 hectare, or 40% expansion in the area planted to sunflower. According to the official June 2022 crop estimates, sunflower production is projected to reach 963 000 tons, which will be the largest sunflower crop since 1999. In conjunction with high prices, even at export parity levels, this is set to support a 56% gain in gross revenue compared to 2021.

While revenue across most summer crops is set to exceed all previous records in 2022, supporting producer profits, it must be noted that input costs also increased very sharply. Fuel prices rose by 17% on average from 2020 to 2021 and is projected to increase by more than 34% in 2022, while fertiliser prices increased by more than 50% in 2021 with a consecutive increase of 67% projected for 2022. Herbicides have increased by almost 40% in 2021, with a further 30% projected in 2022, and electricity by 25% over the past two years. With the war in the Black Sea region ongoing following Russia's invasion of Ukraine in February input costs are projected to remain elevated throughout 2022, which will offset much of the gain in revenue for producers. More importantly, as agricultural commodity prices start to come down over the next 2 to 3 years, persistently high input costs could result in substantially tighter producer margins.

The domestic cotton industry has faced several value chain related challenges over the past decade with major industry efforts in progress to restore confidence among value chain actors. Total cotton area remained relatively flat in 2022, totalling 16 331 hectares with dryland area increasing by 3 900 hectares from 2021 and irrigated area declining by 4 000 hectares. According to Cotton SA's 5th production estimate for 2022, total lint production is projected to decline by 14% to 66 786 lint bales (200kg per lint bale), driven by lower anticipated dryland yields, mainly due to dry spells in the Springbok flats producing region. Price wise it has been a good year, with historic highs observed throughout 2022, as a result of strong international markets.

DOMESTIC MARKET OUTLOOK

Factors underpinning demand prospects differ for the various field crops owing to differences in use and marketing channels. Grains such as white maize and sorghum are predominantly consumed as staple foods. Conversely, the bulk of yellow maize consumption is attributed to the animal feed industry, where it provides the primary energy source in most feed rations. Oilseeds such as soybeans and sunflowers are crushed, producing both vegetable oil for human consumption and protein meal for inclusion in animal feed rations. Soybeans yield more protein meal, which is widely used in the animal feed market, whereas sunflower is a higher oil yielding seed and therefore more oriented to human consumption. In this market, it competes with competitively priced imported palm oil.

Over much of the past decade improved spending power supported dietary diversification, with increased meat consumption and a more diversified staple mix resulting in a consistent decline in per capita maize consumption. However, this trend reversed over the past two years as weak economic growth and rising unemployment constrained spending power. This trend was accelerated by the pandemic and in 2020 and 2021, per capita maize consumption increased. This tendency is expected to persist in light of the slow economic recovery and high inflation, with per capita maize consumption rising further in the short term before stabilising over the latter half of the outlook. Over the ten year period, per capita maize consumption is projected to rise by 0.5% per annum, following a decline of 0.1% p.a. in the preceding decade. Combined with population growth, this supports growth of 11% in white maize consumption by 2031 compared to the 2019-21 base period. Similarly, sorghum consumption is expected to rise by 7% from a much smaller base, after having declined by 18% over the past decade.

Despite slower growth in the demand for animal protein in South Africa, the commitments made in the Poultry Masterplan, which ought to result in some import replacement and consequently a decline in the share of imported products in domestic consumption, combined with export led expansion in the beef sector, still imply some

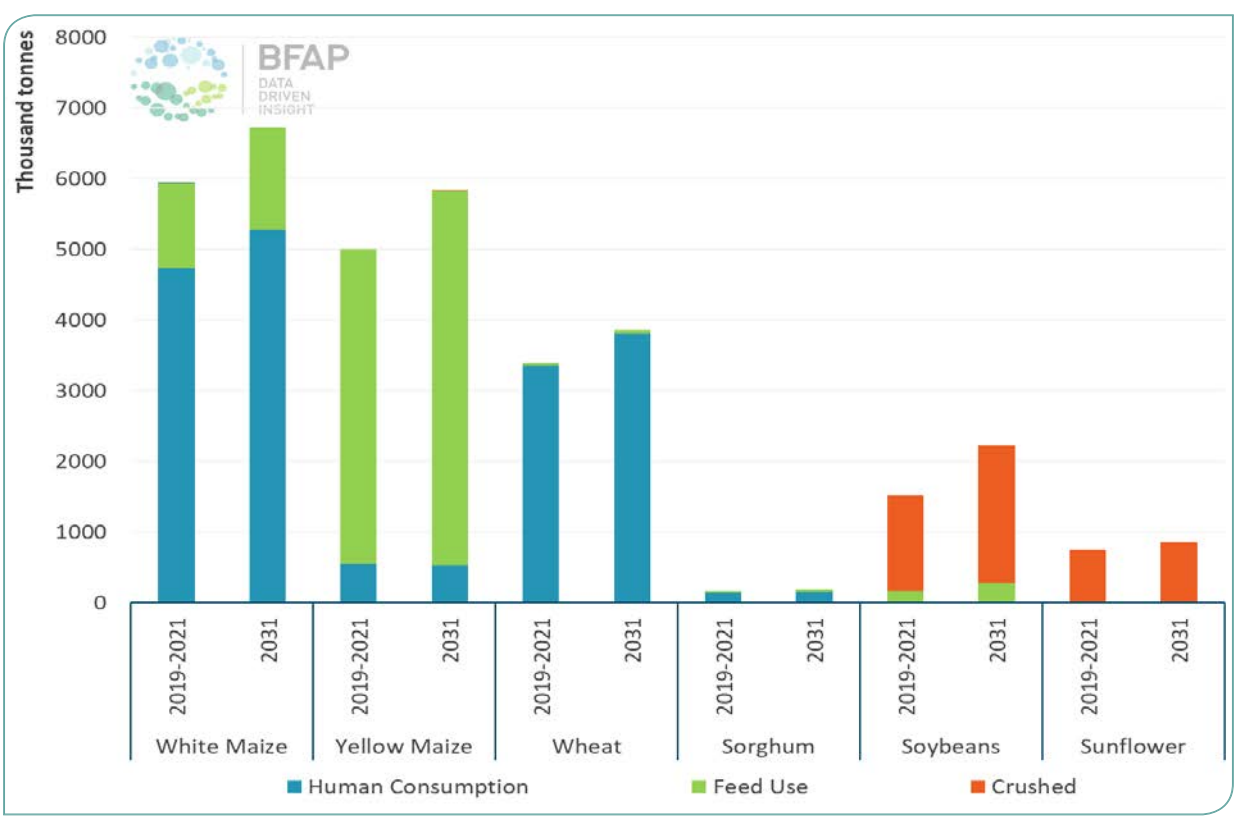


Figure 25: Demand for summer grains in South Africa: 2031 vs. 2019-2021 base period

growth in the demand for animal feed over the coming decade, albeit at a slower rate than the past. Accordingly, yellow maize consumption as animal feed is projected to rise by 19% over the next 10 years. Soybean processing volumes are projected to increase by 40% over the same period (Figure 25), reflecting some increased demand in the animal feed sector, as well as continued replacement of currently imported soybean meal with domestically processed products as the local market prices are expected to trade more consistently at export parity levels, which will boost crushing margins.

High prices emanating from global market dynamics initiated growth in the total summer crop area over the past 2 years and, while this is projected to be sustained in 2023, to reach the highest level in 20 years, the combination of high input costs and normalisation in world market prices results in a contraction in 2024 and 2025, with equilibrium levels slightly higher than those observed in 2018 and 2019. Within this, the relative crop mix reflects the demand trends presented in Figure 25. Having increased sharply in 2020 & 2021, white maize area contracted slightly in 2022. Following another spike in 2023, it is expected to trend downwards over the rest of the outlook by 11% by 2031 relative to the 2019-21 average level. Nevertheless, the expected 1.37 million hectares under white maize by 2031 will still exceed the levels observed in 2018 and 2019. The area under sorghum is also expected to consolidate, stabilising at around 40 000 hectares by 2031, following some expansion in 2023 as a result of strong price support. The area planted to yellow maize is expected to stabilise at similar levels to the recent past, just exceeding 1 million hectares by 2031. Conversely, the area under soybeans is expected to rise by a further 41% compared to the average between 2019-21. This is substantially slower than the past decade, but still implies that the SA soybean area will exceed a million hectares (Figure 26). Given the current levels of relative input and output prices and exceptional soybean yields for two consecutive seasons, especially in the North-West province, the current baseline projection for 2023 area under soybean production, which are based on trend yields under normal conditions, could be considered conservative.

High relative prices for vegetable oils supported a 40% year on year increase in sunflower area in 2022. While short term price support will likely sustain a large area in 2023, some normalisation is expected over the next few years as export parity prices decline when world markets normalise. This should see area stabilise at around 500 000 hectares in the medium term, only marginally below the 2019-21 base period. The rising prevalence of *Sclerotinia sclerotiorum*[7] is expected to remain a challenge adding costs for producers, resulting in some area shifting to soybeans in affected regions. Despite the normalisation in area, production growth is supported by a projected 23% gain in yields over the coming decade, reflecting technological gains and continuous improvement in production practices. This is sufficient to meet the growth in domestic demand, and in the long term the market will achieve balance, with equilibrium prices trading between export parity levels and the value derived from the oil and oilcake. Furthermore, latest seed technology is providing promising results in high-oil content cultivars without compromising significantly on yields per hectare. High-oil content cultivars will support the relative competitiveness of local sunflower crushing plants.

Having expanded significantly since 2014, growth in cotton area slowed in recent years. This was partly attributable to the pandemic, which reduced demand globally and challenges with seed availability and other inefficiencies in the value chain. Following the introduction of several measures to address these inefficiencies and with global demand and prices continuing to recover, area is expected to stabilise and return to a modestly increasing trend over the outlook.

Figure 27 considers the changes in area in conjunction with projected yields, comparing 2031 to the 2019-2021 base period. It reflects fairly consistent yield gains, based on continuous improvements in cultivar technology, as well as a consistent evolution of production practices and area dynamics. The largest yield gains are expected for sunflower and white maize – both commodities where area is expected to decline from current levels. In both instances, the area likely to be lost is considered more marginal for these crops and only enters production as a result of high short term prices. In the case of sunflower, it is also likely in regions where Sclerotinia challenges are the greatest. Consequently, sunflower yields are expected to increase by 23% compared to the average of the past 3 years. In white maize, this gain is projected at 20%. This is sufficient to ensure ample production for South Africa and provide an

[7] A plant pathogenic fungus that causes white mould under conducive conditions.

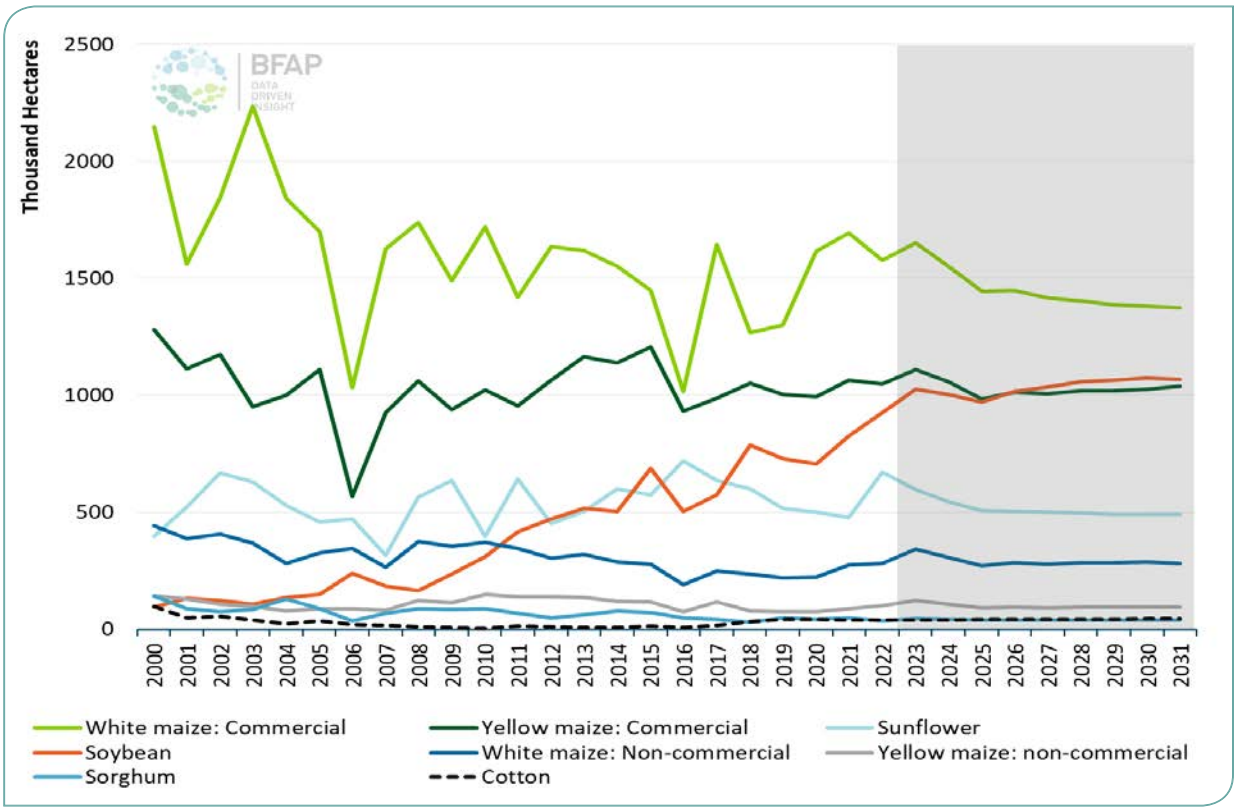


Figure 26: Area under major summer crops in South Africa: 2000 - 2031

exportable surplus into neighbouring markets (Figure 28). For commodities where area is stable or expanding, such as yellow maize and soybeans, yield gains are more moderate at 11% and 18% respectively. While soybean area is expected to expand, yield gains should be supported by the release of the latest seed technologies (improved germplasm and GM traits) following the introduction of the breeding technology levy. In the case of yellow maize, growth seems slower, but from an abnormally high base following exceptional years in 2020 and 2021. The baseline yield path assumes a return to longer term norms in terms of weather conditions.

The combination of area and yield dynamics presented in Figure 27 will have different price effects for the various commodities. High maize prices over the past two years resulted from international factors and prices have been trading at or close to export parity. This is expected to remain the case in the short term, as stocks remain high and even when yield levels and world prices normalise, production is still expected to be sufficient to sustain an exportable surplus, albeit smaller than the recent past. From 2024 onwards, prices are projected to reach an equilibrium slightly above export parity levels, as the exportable surplus will represent a smaller share of the total crop, suggesting that prices will trade more in line with export parity levels calculated from the Eastern Free State, closer to the port than the Randfontein reference point (Figure 28).

While projections reflect the assumption of stable weather conditions, the reality is that this surplus, and the associated prices, will fluctuate in line with weather dynamics. In normal years, the exportable surplus is expected to average around 1.5 million tonnes (Figure 28). This comprises approximately 700 thousand tonnes of yellow maize, predominantly into the global market, and 800 thousand tonnes of white maize into the rest of the Southern African region. Despite competition from Zambia as a competitive supplier of non-GM maize, countries such as Mozambique, Namibia and Botswana continue to rely on South Africa as a consistent supplier, with additional export opportunities often emerging from Zambia's tendency to control export volumes when supplies decline. In years when regional export opportunities are smaller, the white maize price will fall below that of yellow, to induce additional use in animal feed markets. This also implies that white maize prices will likely remain more volatile than that of yellow, which is traded more widely in the global market. Sorghum prices

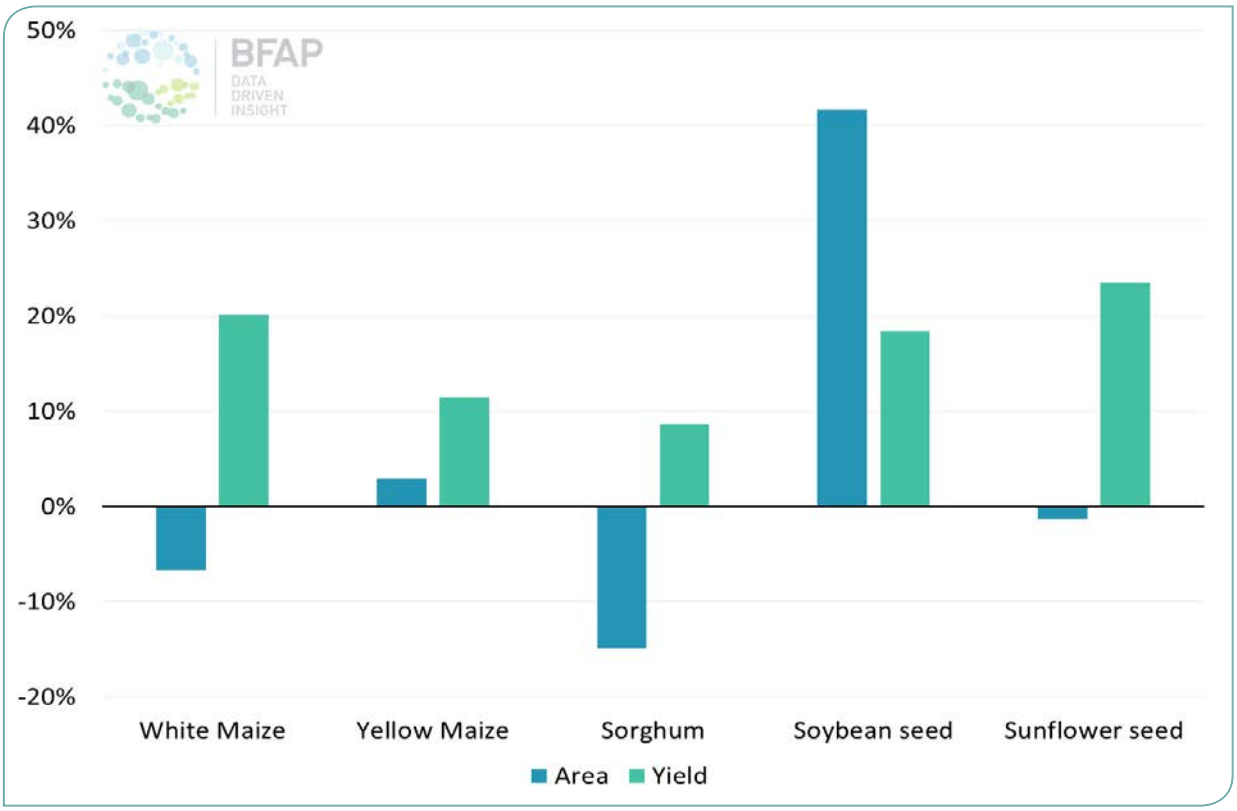


Figure 27: Percentage change in area and yield for major summer crops: 2031 vs. 2019-2021 base period

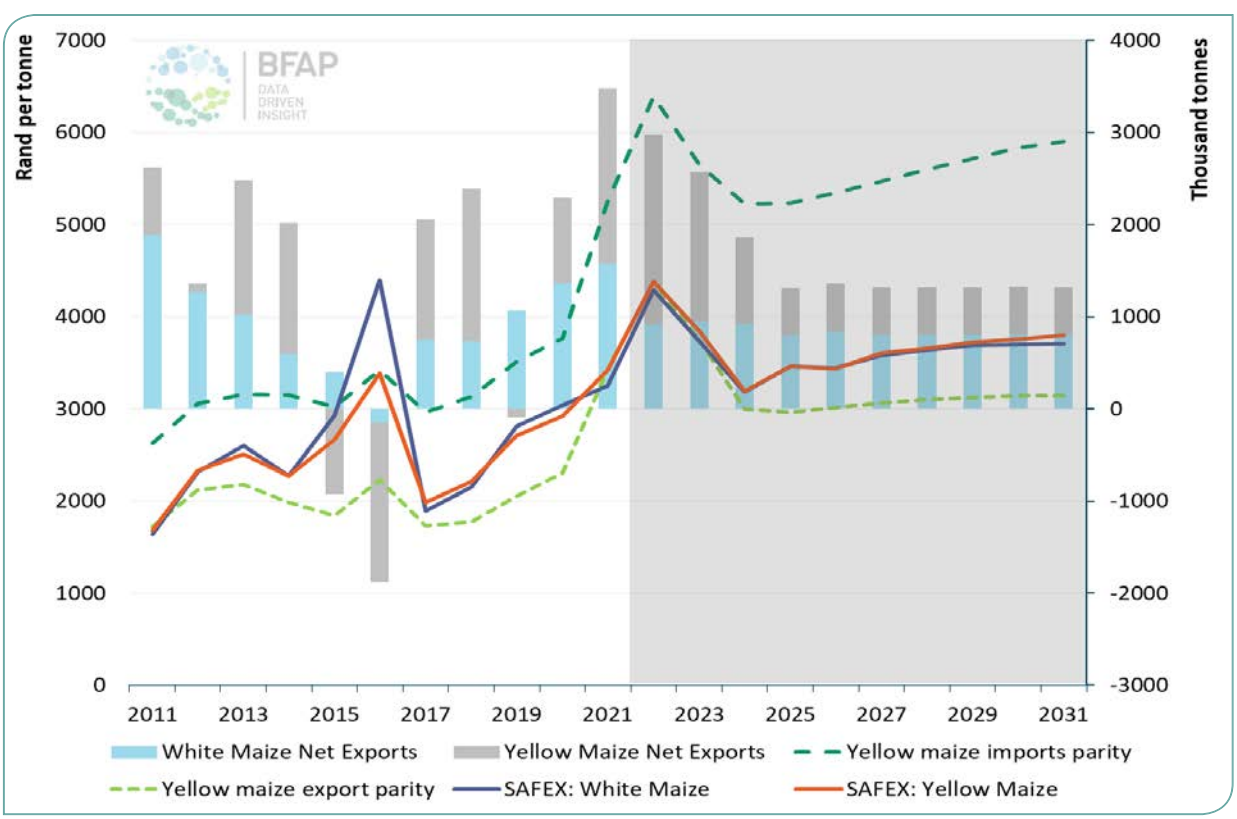


Figure 28: Maize net exports and prices: 2011 – 2031

are expected to retain a premium over maize, given the lower yields.

High oilseed prices over the past 2 years have also been the result of global dynamics, as sunflower prices have traded close to export parity levels since 2020 and are expected to remain there in 2022 following the sharp increase in production volumes. Similarly, successive bumper crops are expected to push soybean prices to export parity levels in 2022 (Figure 29). While sunflower prices are expected to trade between export parity and the derived price from oil and oilcake once area normalises from current highs, soybean production levels are expected to be sufficient to yield an exportable surplus and therefore keep prices close to export parity in normal years, with the only exception being the inevitable years of weather induced yield reductions that are not reflected under baseline assumptions.

Figure 30 presents the combined effect of yield, price and input cost projections on producer margins. It provides an index, with 2018 as base year, and therefore compares the weighted average gross margins from summer crops, both dryland and irrigated, to 2018 levels. This enables contextualisation of the projected profitability against two distinct periods. In 2018 and 2019, profitability was under pressure due to weak prices in 2018, arising from high carryover stock following the 2017 harvest and then weather induced yield reductions in 2019. Conversely, for the 2020 to 2022 period production was highly profitable, owing to the rare combination of strong yields and high prices arising from global market dynamics. In the near term, profitability is expected to consolidate, as market prices decline faster than input costs on the assumption of normalising weather conditions. Margins do not however reach the lows of 2018. In terms of relative crop performance, maize margins are projected to decline more than oilseeds in 2023, due to the crop's higher fertiliser requirement. Similarly, in more input intensive systems, such as irrigated crops, the decline in margins will be sharper due to the stronger input cost effect.

The stronger relative profitability of oilseeds, particularly soybeans, is a key factor driving further expansion over the outlook. The area planted to soybeans could surpass a million tonnes in 2023 and despite some consolidation in 2024 as prices normalise, area cultivated to soybeans is expected to remain above a million hectares for most of the projection period.

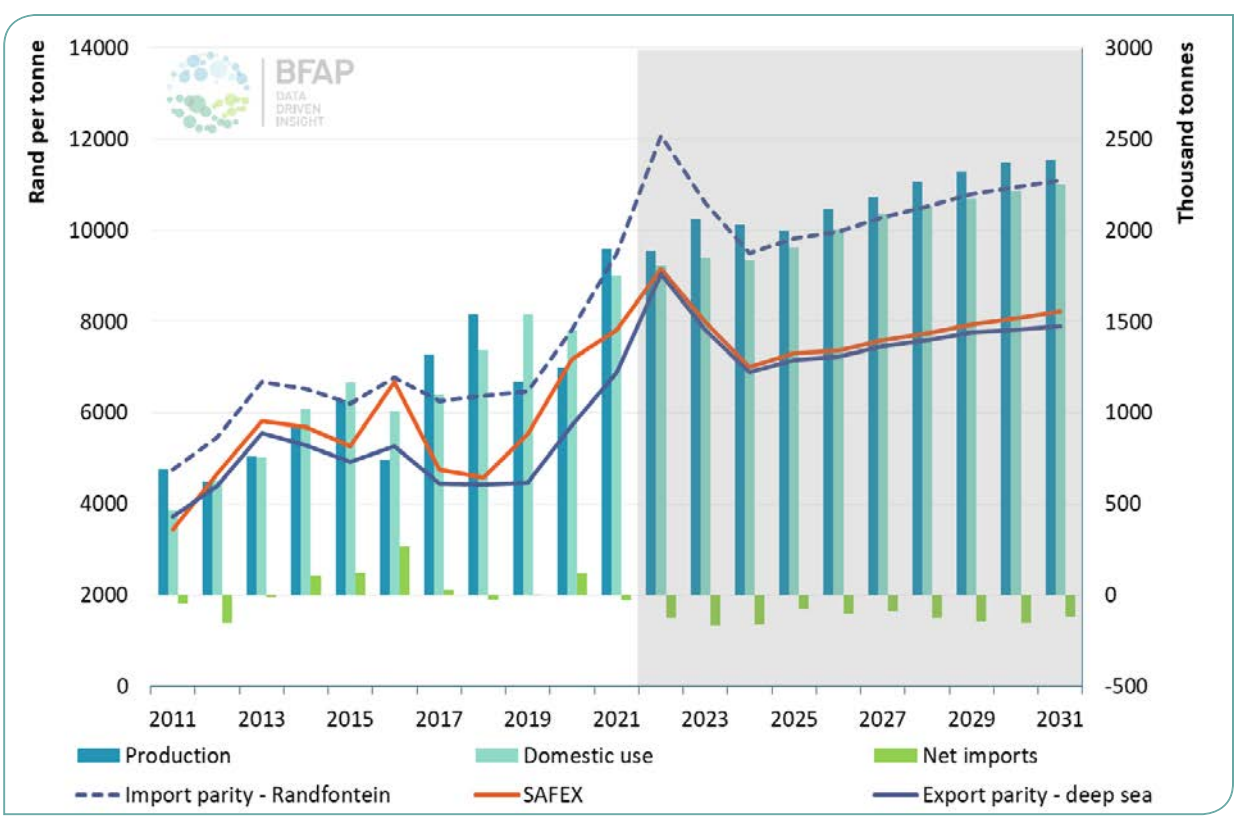


Figure 29: Soybean production, consumption, trade and prices: 2011-2031

South Africa has ample processing capacity (Figure 31), to the extent that the industry struggled with low utilisation rates in recent years, as soybean production was insufficient to ensure throughput. Despite these challenges, the industry replaced 450 000 tonnes of imported oilcake over the past decade. As the soybean crop continues to expand and utilisation rates rise, crush facilities will also become more competitive, through a more optimal fixed cost structure at higher throughput levels. The bumper crop in 2021, which is set to be repeated in 2022, enabled domestically processed oilcake to trade below import parity, leading to some procurement of domestically produced oilcake even in coastal regions, and in 2022 oilcake imports are expected to decline substantially. Over the course of the outlook period soybean oilcake imports are set to remain below 300 000 tonnes, compared to 496 000 tonnes in 2021, with imports occurring into the coastal regions, mostly in the off season. While some trade has started to occur to the coastal regions through the harvest season, the high cost of transportation continues to inhibit full import replacement. In this regard, investment into rail infrastructure to reduce this cost would benefit both the soybean processing and livestock subsectors.

Figure 32 provides an aggregated summary of supply and demand for oilcake. It shows total consumption in 2011, 2021 and 2031, as well as the relative contribution of soybean, sunflower and canola oilcake production, as well as imported oilcake. It clearly illustrates the extent of historic soybean oilcake production growth. While this is expected to slow over the outlook, in line with the increasing maturity of the industry, it remains substantial and by 2031 is expected to be 28% above 2021 levels.

Soybean oilcake remains the core source of protein in most animal feed rations, due to its high protein content and favourable pricing relative to alternatives such as fishmeal. As livestock production continues to grow, supported by actions such as the Poultry Masterplan and rising beef exports, the demand for soybean oilcake will also rise, with growth projected at an average of 2.6% per annum.

While sunflower and canola are crushed predominantly for the vegetable oil market, canola in particular provides an attractive alternative source of protein for animal feed, particularly in the Western Cape, where it is produced and processed. By 2031, canola oilcake production is

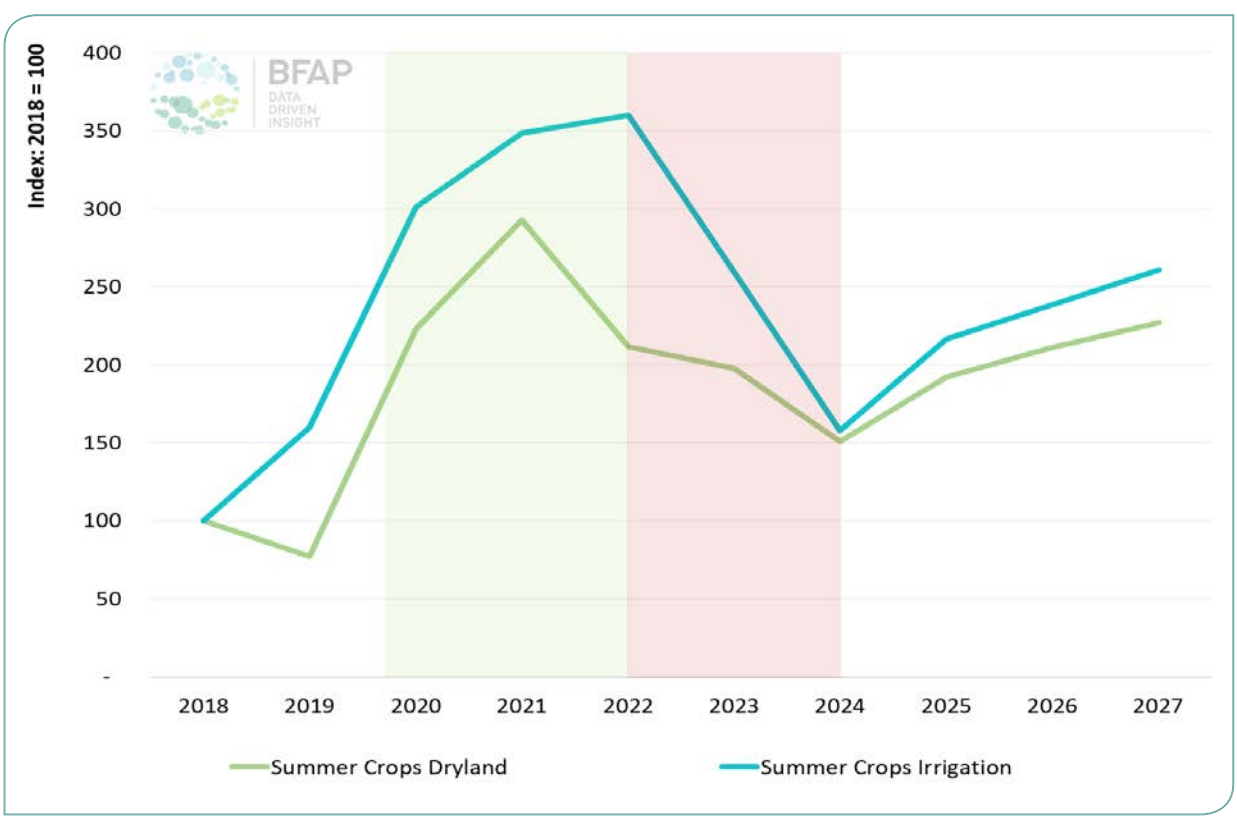


Figure 30: Combined gross margin performance index for key summer crops: 2018 - 2027

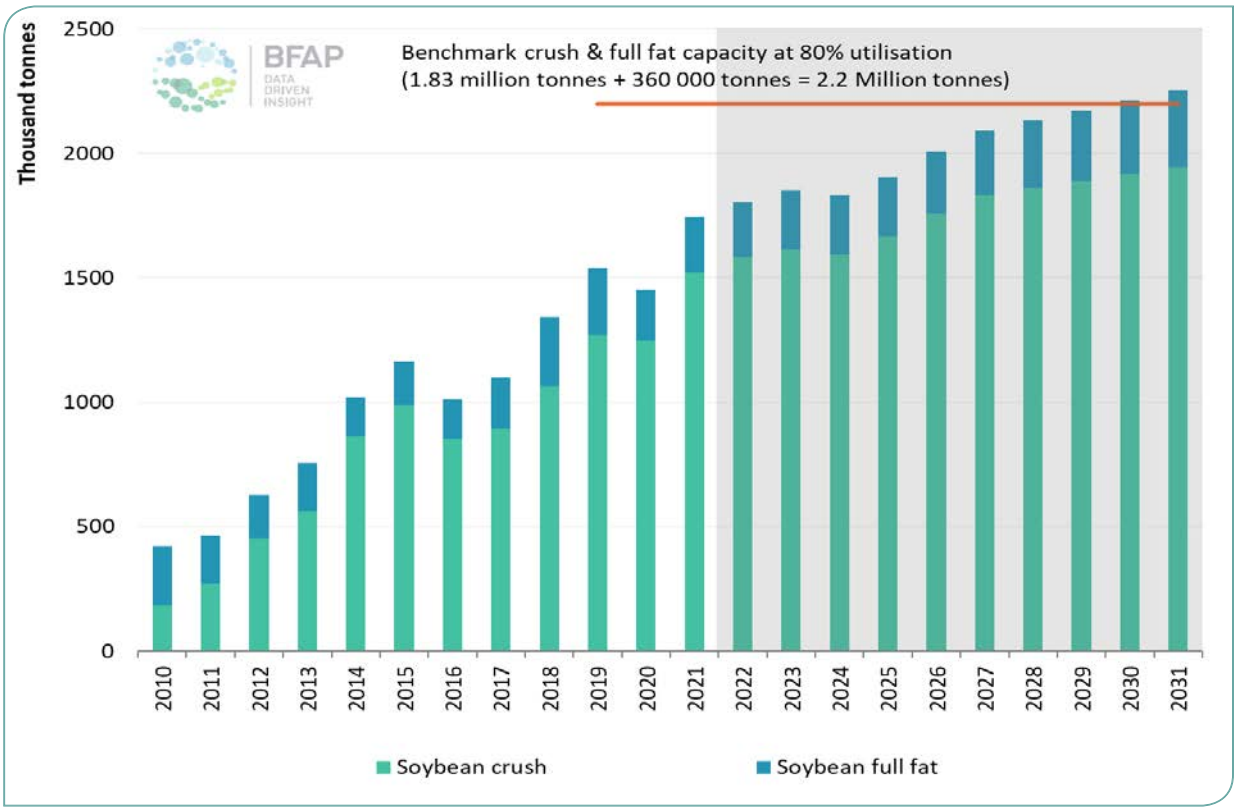


Figure 31: Soybean utilisation and crush capacity: 2011-2031

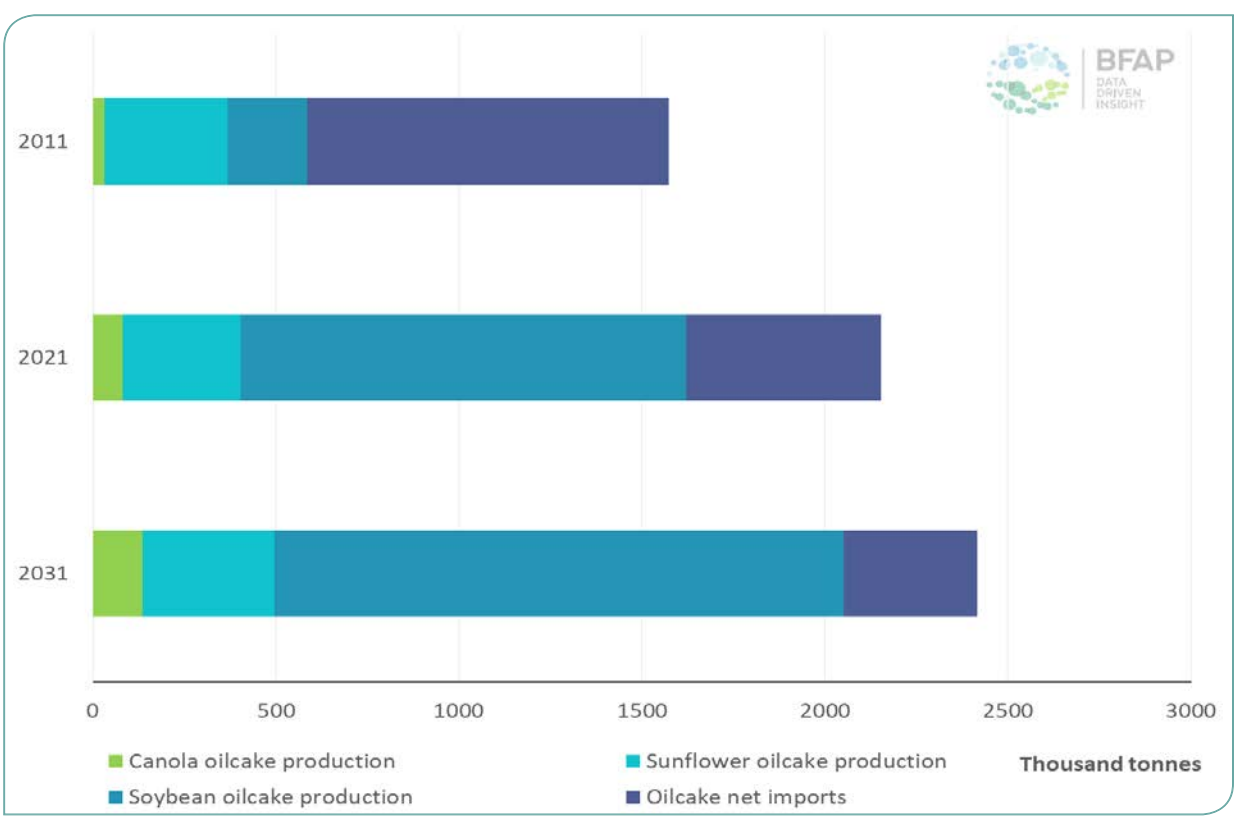


Figure 32: Oilcake supply and demand in South Africa: 2011-2031

expected to rise by 64%, but this growth is from a small base and therefore only equates to 52 000 tonnes. This will likely be taken up by dairy and pork producers in the Western Cape.

Vegetable oil consumption declined in 2020 as consumer spending came under pressure and food service operations slowed amid lockdown restrictions. Despite the return of food service operations in 2021, the decline in consumption accelerated, as spending power remains constrained and prices have increased to unprecedented levels. These increases are driven by global dynamics which include the drive for renewable fuels, high Brent Crude oil prices and supply constraints globally. These include reduced canola production in Canada as a result of drought conditions last year, poor palm oil yields in Malaysia as a result of aging trees and labour mobility constraints through COVID, and reduced sunflower oil supply from the Black Sea region as a result of the ongoing war. Being a net importer of vegetable oils, these global dynamics spill into the South African market.

In the medium term, as prices normalise and income recovers, albeit slowly, growth is expected to resume. By 2031, total vegetable oil consumption is expected to rise by 18% relative to average levels between 2019 and 2021.

Figure 33 indicates that palm oil imports continue to play an important role in the South African vegetable oil consumption mix. Palm oil imports have increased from an average of 350 000 tonnes from 2009-2011 to 480 000 tonnes in 2021 – an increase of 37%. Owing to its relative affordability and favourable heating properties, its share in total vegetable oil consumption increased from 36% in 2011 to 40% by 2021. Over the same period, sunflower oil consumption increased by 4%, though this had been higher prior to the sharp decline in 2021. Soybean oil consumption rose by 28% and canola oil consumption by 80% albeit from a much smaller base. Over the course of the projection period, sunflower oil consumption is expected to rise by 14%, compared to 25% for both canola oil and soybean oil. Despite growth in processing of soybeans, sunflower and canola, the share of domestically produced vegetable oil in the total non-palm oil consumption mix is projected to remain similar to 2021 levels by 2031 at 81%. Soybean processing yields substantially more oilcake and less oil than canola and

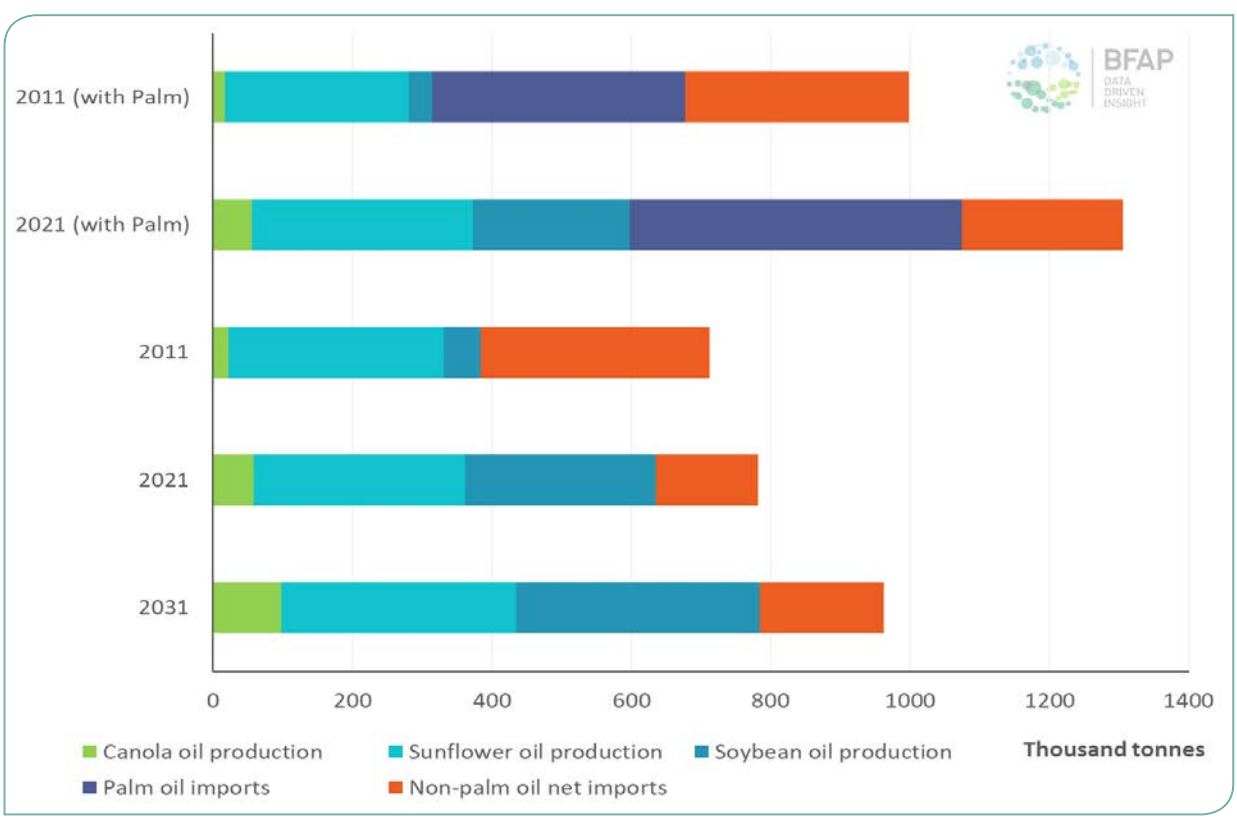


Figure 33: Vegetable oil supply and demand in South Africa: 2010-2030

sunflower and while canola processing is projected to grow by an annual average of 4.7%, this comes off a small base. The projected rate of sunflower oil production growth is insufficient to reduce the share of imported oil further. While sunflower oil and soybean oil do compete with palm oil in the consumption basket, palm oil is not produced in South Africa and as an affordable alternative, imports are expected to remain significant.

BOX 4: A CONSUMER PERSPECTIVE ON THE MOST POPULAR SOY-BASED FOODS IN SOUTH AFRICA

BFAP conducted a primary consumer research project for the Oilseeds Advisory Committee (OAC) in 2021/2022, to investigate South African consumers' behaviour, knowledge and perceptions regarding selected soy products.

What are the most popular soy-based foods consumed?

Overall, the most popular soy-based foods were soy mince/toppers (consumed by 90% of the overall weighted sample), followed by cooked soybeans (71%), ProNutro and FutureLife instant porridge (70%), soy-based meat alternatives (56%) and snack bars with soy (54%). The least popular soy-based foods were tofu (18%) and soy milk (36%) (Figure 34).

Comparing the intake frequencies of low-income, middle-income and affluent households:

From a socio-economically disaggregated perspective (Figure 34 and Table 7):

- Low-income households revealed the most frequent intake of soy mince/toppers and cooked soybeans.
- Affluent households followed by middle-income households revealed the most frequent intake of snack bars with soy and tofu.

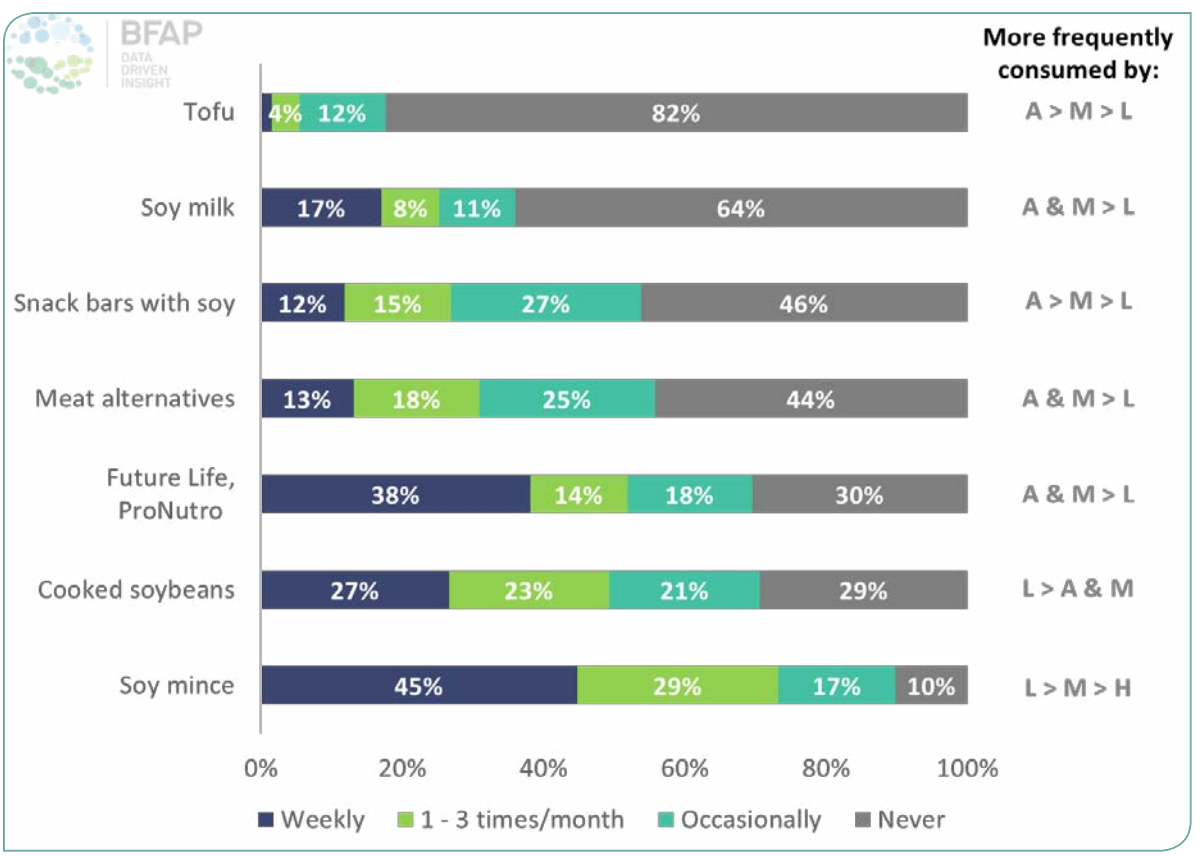


Figure 34: Typical intake frequencies of soy-based foods

BOX 4: A CONSUMER PERSPECTIVE ON THE MOST POPULAR SOY-BASED FOODS IN SOUTH AFRICA (CONTINUED)

- Affluent and middle-income households revealed the most frequent intake of instant porridge (FutureLife, ProNutro), soy-based meat alternatives and soy milk.

Table 7: Socio-economically disaggregated perspective on soy-based foods intake frequencies

Low-income households:	Middle-income households:	Affluent households:
Dominant soy-based foods* (% of sample weekly consumption):		
Soy mince (69%)	Future Life, ProNutro (52%)	Future Life, ProNutro (50%)
Cooked soybeans (36%)	Soy mince (34%)	Snack bars (21%)
Future Life, ProNutro (18%)	Cooked soybeans (24%)	Soy milk (21%)
Soy milk (12%)	Soy milk (21%)	Soy mince (18%)
	Meat alternatives (20%)	Cooked soybeans (14%)
	Snack bars (17%)	Meat alternatives (14%)

** With weekly consumption by 10% or more of the sub-group*
Source: BFAP Survey results

OUTLOOK FOR FIELD CROPS
WINTER GRAINS AND OILSEEDS

INTERNATIONAL MARKET SITUATION

The turmoil in international markets has impacted particularly heavily on winter grains, owing to the substantial combined share of Russia and Ukraine in global wheat and barley exports of 24% and 21% respectively. Wheat prices peaked in May 2022 at a level 42% higher than in January and, while the war was a major contributing factor, it came at a time when stock-to-use ratios had been trending lower. While prices softened in June, US HRW wheat prices remain above $400 per tonne, reflecting significant uncertainty around the prospects for the 2022/23 crop. The International Grains Council (IGC) expects a reduction in planted area, largely as a result of the war in the Black Sea region, combined with a slightly below average yield resulting in a 1.5% reduction in global production. This includes a 41% year on year decline in Ukraine and a 13% increase in Russia. It also accounts for a strong year on year recovery in Canada following its poor, drought affected harvest in 2021/22 and a 4.4% increase in the USA, but with offsetting downward revisions in Australia and Argentina. Under baseline assumptions of normalising weather conditions, prices are expected to decline over the next two years as producers respond to current levels with area expansion. Weaker consumer demand amid pressure on incomes and high general inflation could also contribute to the decline. Post 2025, wheat prices are expected to reach an equilibrium at around $260 per tonne, marginally above 2018-2020 levels (Figure 35).

Barley production declined by 8% in 2021/22 to a 3 year low, with reduced output in most major producing countries, except for Australia, Ukraine and Argentina. Given the war in Ukraine and resulting limitations on its ability to distribute and export, prices have increased sharply, but both feed and industrial use are expected to decline as a result. Early indications from the IGC suggest that the 2022/23 crop will only be marginally better, partly as a result of a 47% reduction in output from Ukraine, and further reductions from Australia. Offsetting year on year gains are expected in Canada, where weather conditions have improved following the severe drought in 2021, and in the USA. This suggests that, despite weaker demand, malting barley will maintain a small premium over wheat prices, but will continue to follow a similar trend in the medium term, based on inherent competition for winter crop area.

Canola prices already increased sharply in 2021 following a drought induced 35% decline in Canadian production, which was the major contributing factor to a 4% decline in production globally. Combined with firm crush demand as

a result of escalating vegetable oil prices, this drove stocks to a multi-year low. Substantial price gains did induce area expansion and, combined with yield recovery, particularly in Canada, the IGC expects a strong rebound in the global harvest in 2022. Nevertheless, prices have risen further in 2022 to a new all-time high, owing to a combination of high energy costs, a continued drive for renewable fuels, reduced palm oil supply from Malaysia and reduced sunflower oil supply from the Black Sea region, the major contributor to sunflower oil exports globally. As a high oil yielding seed, canola prices will maintain some support from the bigger vegetable oil complex. While the global supply response is expected to drive prices lower in 2023 and 2024, prices are expected to reach an equilibrium that is around 19% higher than the average level observed between 2019-2021, reflecting the higher underlying value of vegetable oils (Figure 35).

DOMESTIC MARKET SITUATION

South Africa typically imports around half of its wheat demand and so prices tend to trade at import parity levels, implying that international market dynamics filter into South African prices. This does come with a caveat, as South Africa applies a variable import tariff, which comes into effect when the price of HRW wheat falls below $279 per tonne. Through the lower world price cycle of the past few years, this tariff has been in effect consistently, at varying levels, since 2015. It also mitigated the effect of initial price gains in 2021, as prices had to rise above the $279 reference price before having any major effect on domestic markets, which duly occurred in the second half of 2021. Consequently, despite a 13% appreciation in the value of the Rand, wheat prices increased by only 5% year on year and, combined with delivery of the largest crop in almost 20 years, supported growth of 12% year on year in the gross value of wheat production. In 2022 however, this is set to be exceeded, as spiralling prices globally in the wake of the war in Ukraine are expected to support a 38% increase in domestic wheat prices. Following strong performance in 2020 and 2021, producers are expected to expand area and, even if yields return to their longer term trend, revenue from wheat production is expected to increase by a remarkable 30% year on year in 2022 (Figure 36). It must be noted however that input costs also rose sharply, and these are not yet accounted for in revenue projections, thus profit will not increase to the same extent.

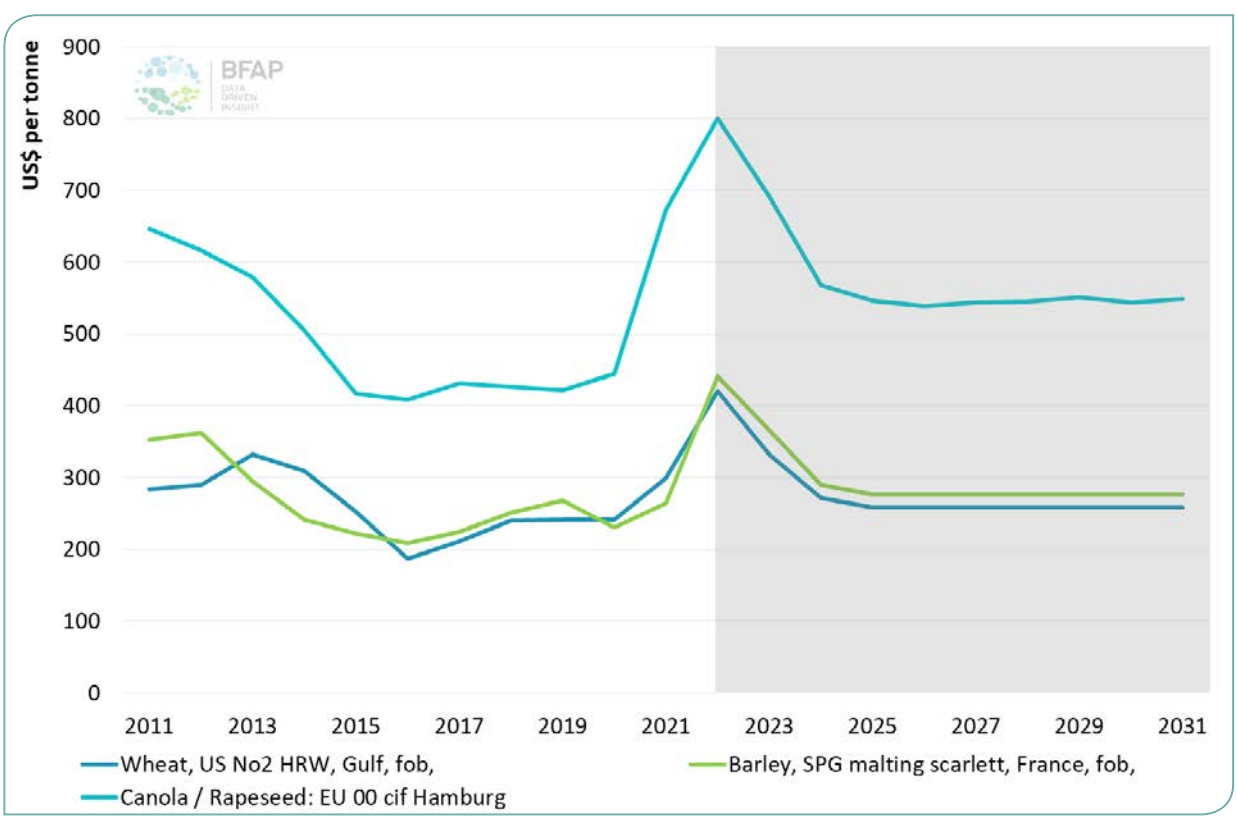


Figure 35: World prices for major winter grains and oilseeds
Source: FAPRI & BFAP, 2022

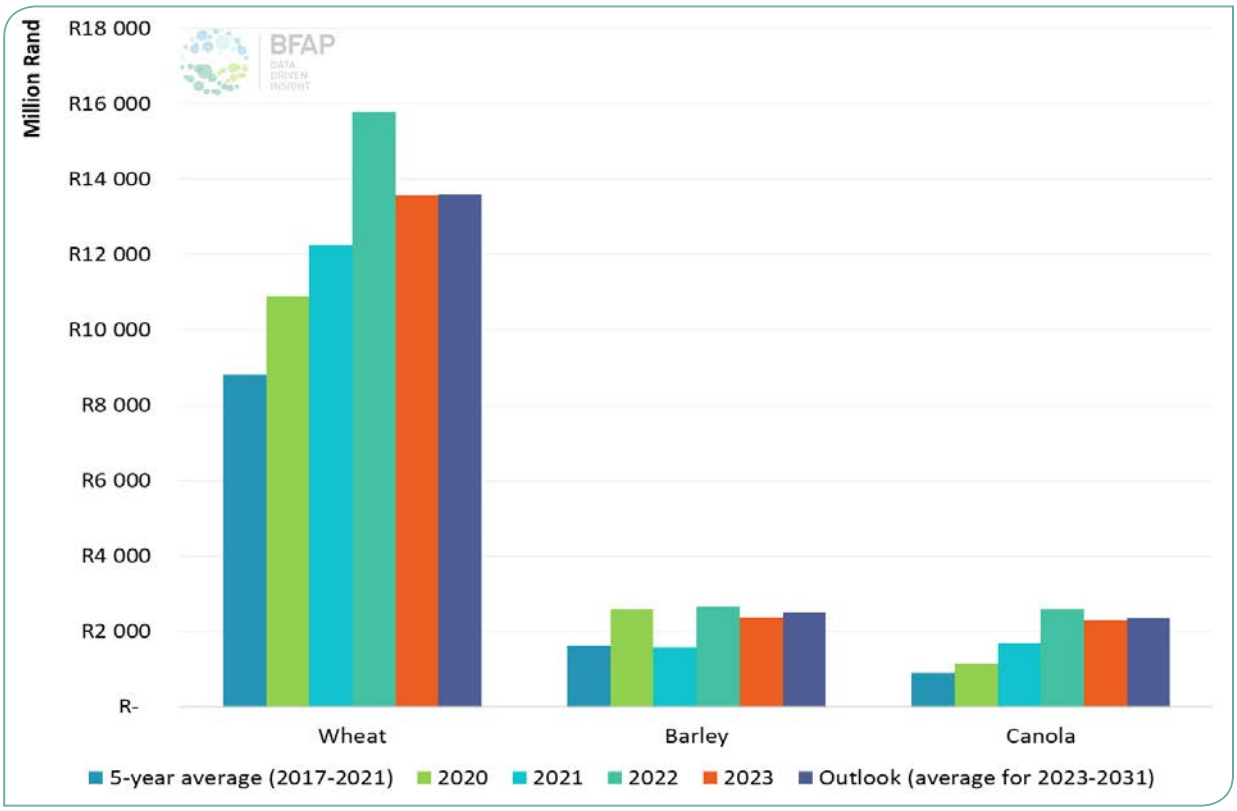


Figure 36: Gross value of production for selected winter crops in South Africa

Barley prices are inherently tied to wheat in South Africa, but at a sectoral level performance diverged in 2021. While barley prices followed wheat higher, production declined by 43% as producers cut back sharply on production area. This follows excessive stock build-up in 2020, when producers delivered a bumper harvest, while processors faced restrictions emanating from the intermittent bans on alcohol sales through various stages of COVID-19 related restrictions. As a result, the gross value of barley production declined by 39% in 2021 and, while it is expected to rebound strongly with growth of 68% in 2022 (Figure 36), area has not fully recovered and the initial intentions to plant released by the crop estimates committee are still 20 000 hectares below the average level in 2018-2020. Consequently, when prices normalise, revenue is also expected to decline and over the course of the projection period, is not expected to exceed 2020 levels.

Canola production shone in 2021, as a 25 000 hectare expansion in area, strong yield performance and a 24% increase in prices year on year combined to drive revenue up by 47% from already strong 2020 levels. Production growth was such that some canola was exported in 2021, in order to process the remaining crop effectively and maintain the product's premium status in the South African market. With prices running up further in 2022 in line with global levels, despite remaining close to export parity levels, intentions to plant point to an additional 20 000 hectares to be added in 2022. Yields are expected to be lower, as challenges with seed availability amid rapid expansion and global supply chain constraints forced many producers to use more farm saved seed than usual. Nevertheless, with prices expected to rise by 40%, gross revenue is set to reach new highs in 2022, with further growth of 53% from last year's record level. Expansions have also prompted investment into domestic seed multiplication, which should be able to sustain a bigger area in 2023.

DOMESTIC MARKET OUTLOOK

Following a sustained period of relative stability, wheat area in the Western Cape increased in 2021 and 2022, partly due to remarkable revenue performance, but also increased uncertainty in the barley sector following repeated alcohol sales bans. In light of the sharp increase in input costs such as fertiliser, fuel and chemicals, area is expected to remain fairly stable in 2022, despite recent price gains, before declining somewhat in 2023 and 2024 as prices start to normalise. In the medium term, the area

under wheat production in the Western Cape is projected to trend slightly downwards, to reach 313 000 hectares by 2031, from an average of 337 000 hectares between 2019 and 2021. This reflects continued competition for resources in the winter rainfall region, as well as canola's increasing prominence in crop rotation systems, especially in the Western production regions like Malmesbury and Piketberg where canola did not traditionally feature as strongly as rotational crop as in the Southern Cape regions of Caledon and Swellendam. With higher prices and under normal rainfall conditions, the total winter crop area is expected to increase by 5% over the same period. Most of the additional area, as well as that substituted out of wheat production, is expected to be cultivated to canola, which is projected to reach 140 000 hectares by 2031, from an average of 83 000 hectares between 2019 and 2021, and 125 000 in 2022. A small recovery is also expected from the recent lows in barley area as stocks are cleared out of the market, but by 2031 the area planted to barley in the Western Cape is still projected to be 6.5% lower than the average levels between 2019 and 2021 (Figure 37).

Following a sustained period of decline, wheat area in the Free State has stabilised in recent years and, in response to the current high prices, is expected to rise to 95 000 hectares or 18% of national wheat area in 2022. Despite the short term gains, area is expected to stabilise at around 85 000 hectares in the medium term, as soybean production in particular is expected to provide stiff competition and gain further hectares in the Free State. In irrigated regions, some expansion is expected in barley area to make up for reduced production from the Western Cape, whereas irrigated wheat area is projected to remain fairly stable over the outlook period, owing largely to strong competition for water resources with perennial and long term crops such as lucerne and tree nuts (Figure 37).

Figure 38 presents the percentage change in both area and yield for wheat, barley and canola in the different production regions. It illustrates fairly consistent yield growth under the assumption of stable weather conditions and continuous improvements in technology. In irrigated regions, wheat and barley yields are expected to improve by 13% and 7% respectively, with an inverse correlation to area expansion. Yield gains for wheat produced in the summer rainfall region are fairly conservative – firstly because they occur

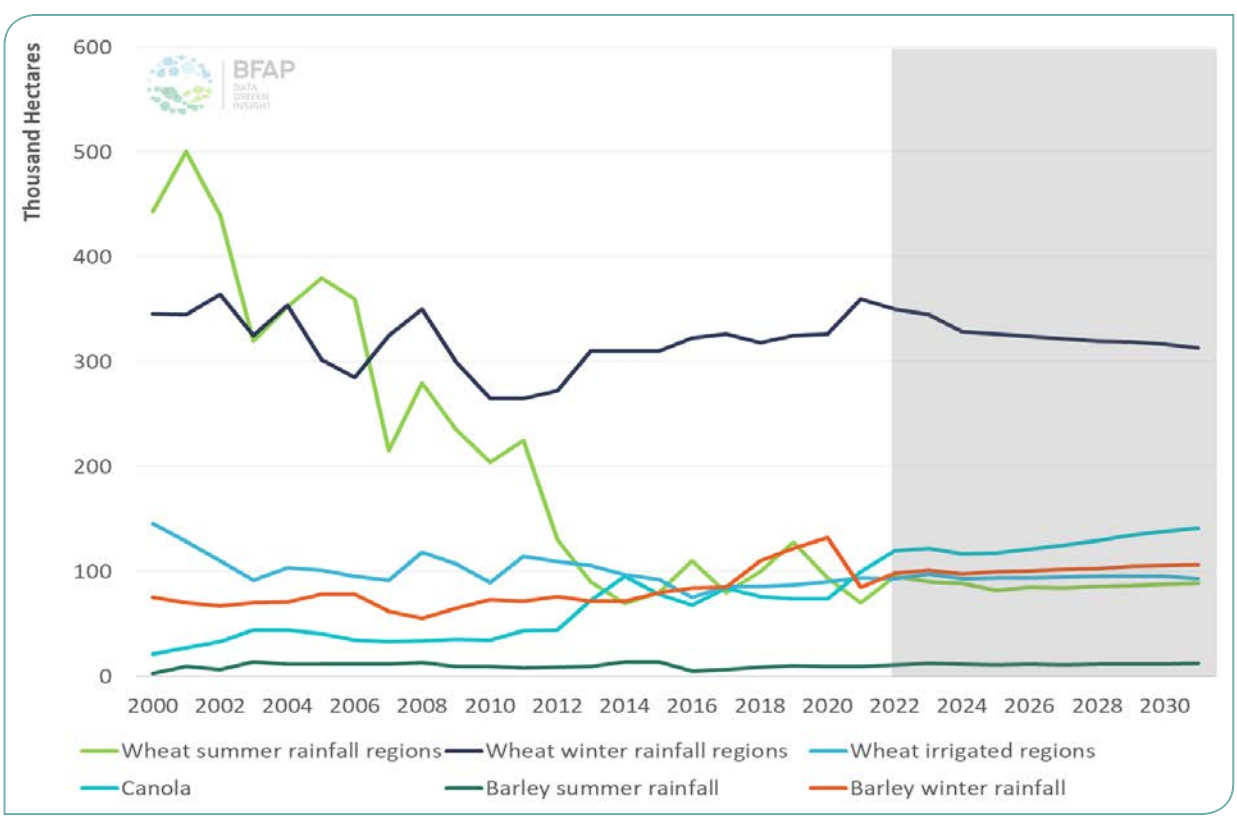


Figure 37: Area under major winter crops in South Africa: 2000 - 2031

from a high base following the remarkable levels attained in 2021 (5t/ha) and secondly because average weather conditions in the summer rainfall region have become less conducive to wheat production.

The fastest yield growth of 24% over the ten year period is projected for canola, where it occurs from a fairly low base, which was affected by poor weather conditions in 2019. Industry yields made a step change in 2020 and sustained a high level in 2021 despite area expansion, and this is considered more reflective of the greater potential from new cultivars. South African producers benefit from international technology, and recent investments into local production and multiplication of these varieties is also expected to ease availability constraints observed in 2022, which should reduce the share of farm saved seed in total plantings and support further yield gains over time.

The combination of area expansion and further yield improvements is set to drive canola production growth of 4.6% per annum over the coming decade. This will necessitate further investment in expanded processing facilities, as current processing capacity is estimated at 175 000 tonnes but is also expected to result in fairly consistent canola exports (Figure 39). Yield gains achieved over the past two years and those projected over the outlook period are sufficient for profitability to compete favourably with alternatives in the winter rainfall region, even at export parity prices. Canola has also proved itself as efficient in a rotation system with other winter crops. Southern Oil (SOILL) currently remains the sole buyer and processor of canola, and has established a range of premium value added products, which is a key driver of crush demand growth towards 2031. Additional canola processing capacity can also contribute towards additional replacement of presently imported vegetable oil and the oilcake has ample offtake in dairy and pork production systems in the Western Cape.

Wheat and barley production growth is expected to be substantially slower than canola, at 10% and 13% respectively, over the 10 year projection period. In the case of barley, this is sufficient to sustain a fairly balanced market, which is in line with AB InBev's domestic procurement commitments and should allow for limited net exports. By contrast, wheat production fails to keep up with consumption, suggesting that a growing share of domestic

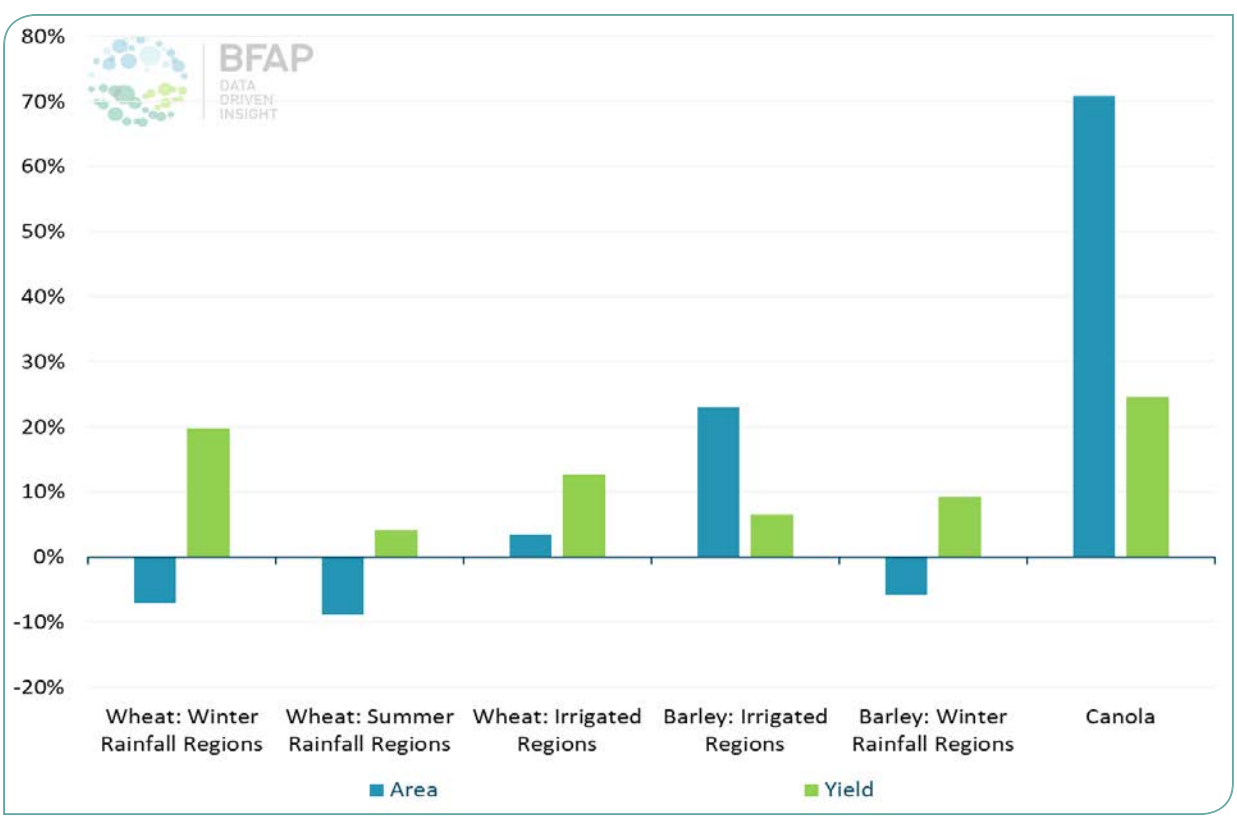


Figure 38: Percentage change in area and yield for major winter crops: 2031 vs. 2019-2021 base period

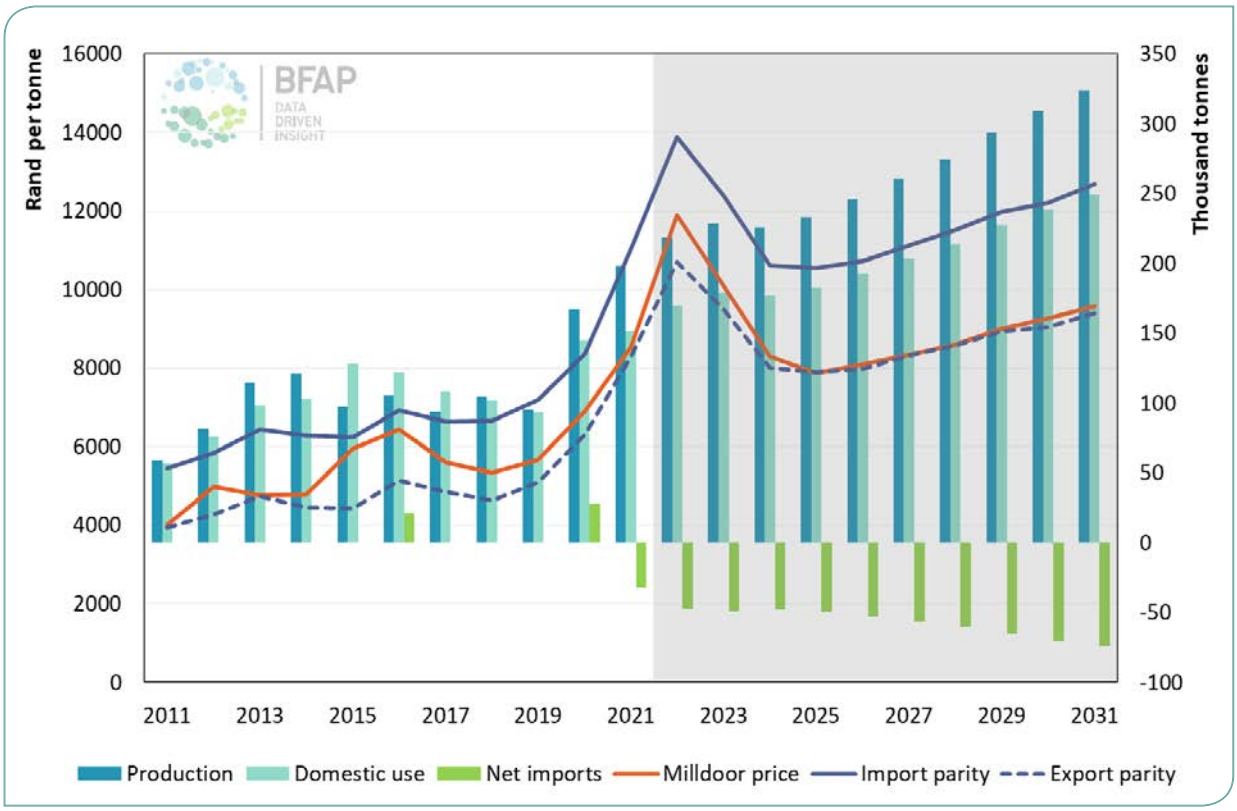


Figure 39: Canola production, consumption, trade and prices: 2011 - 2031

use will be imported by 2031 (Figure 40). This divergence is small, however, and by 2031, 50% of domestic use is expected to be imported, as opposed to 48% on average over the 2019-21 base period. This is still well below the 60% import share observed in 2019 following the poor domestic wheat crop.

The sustained net import position also implies that wheat prices will continue to trade at import parity. With barley prices implicitly following those of wheat, prices for both commodities will depend on global market dynamics, domestic trade policy and exchange rate fluctuations. Under the baseline projection, policies are assumed to remain in the current state, implying that the variable wheat tariff is triggered when the price of HRW wheat falls below the reference of $279 remains. Under current world price assumptions, this suggests that the tariff will again come into play from 2024 onwards, essentially providing a floor to international prices. It also accounts for the retention of the current quota of 300 000 tonnes that can be imported free of this duty from the European Union under the Economic Partnership Agreement (EPA). Consequently, following the initial decline in 2023 and 2024 as world prices normalise from current peaks, the primary factor driving wheat and barley prices post 2024 will be the exchange rate. Resultant prices are expected to rise by just over 3% per annum from 2024 to 2031, which is less than general inflation over the same period.

Figure 42 presents the effect of these price and yield projections on gross producer margins, which account for direct production expenditure, but not for overheads and producer remuneration. It compares performance across the three production regions, using an index with 2018 as base year. This enables contextualisation of performance over the outlook relative to two distinct historical periods. Wheat margins came under severe pressure in 2019 as poor weather conditions resulted in dismal yields in dryland production systems. Conversely, the combination of strong yields and high prices supported exceptional margins, particularly in the Western Cape in 2020 and across all three regions in 2021. Despite improved revenue, margins in the winter rainfall areas are expected to decline, but remain favourable in 2022, before declining sharply in 2023. This decline is evident across all regions and follows sustained high input costs, in an environment where agricultural commodity prices start to decline. It is clear however that, as long as average yields are attained,

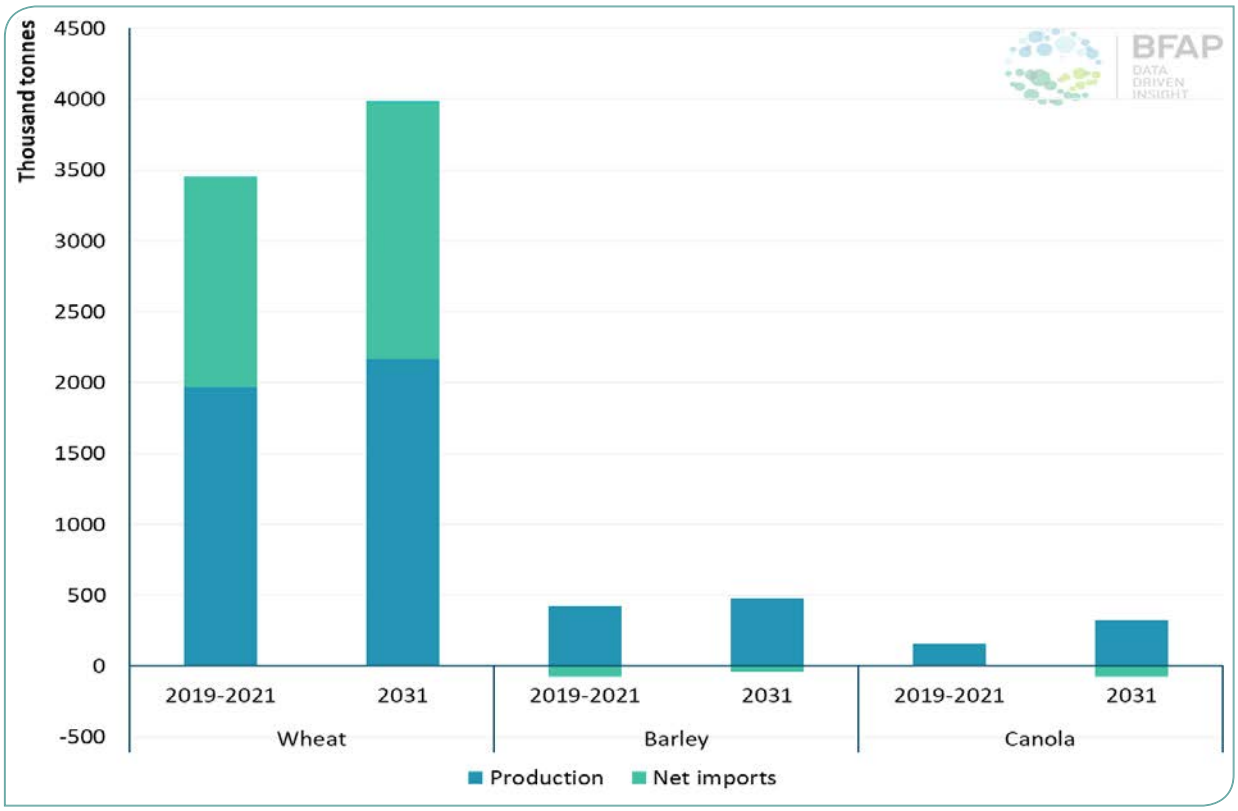


Figure 40: Demand wheat, barley and canola: 2031 vs. 2019-2021 base period

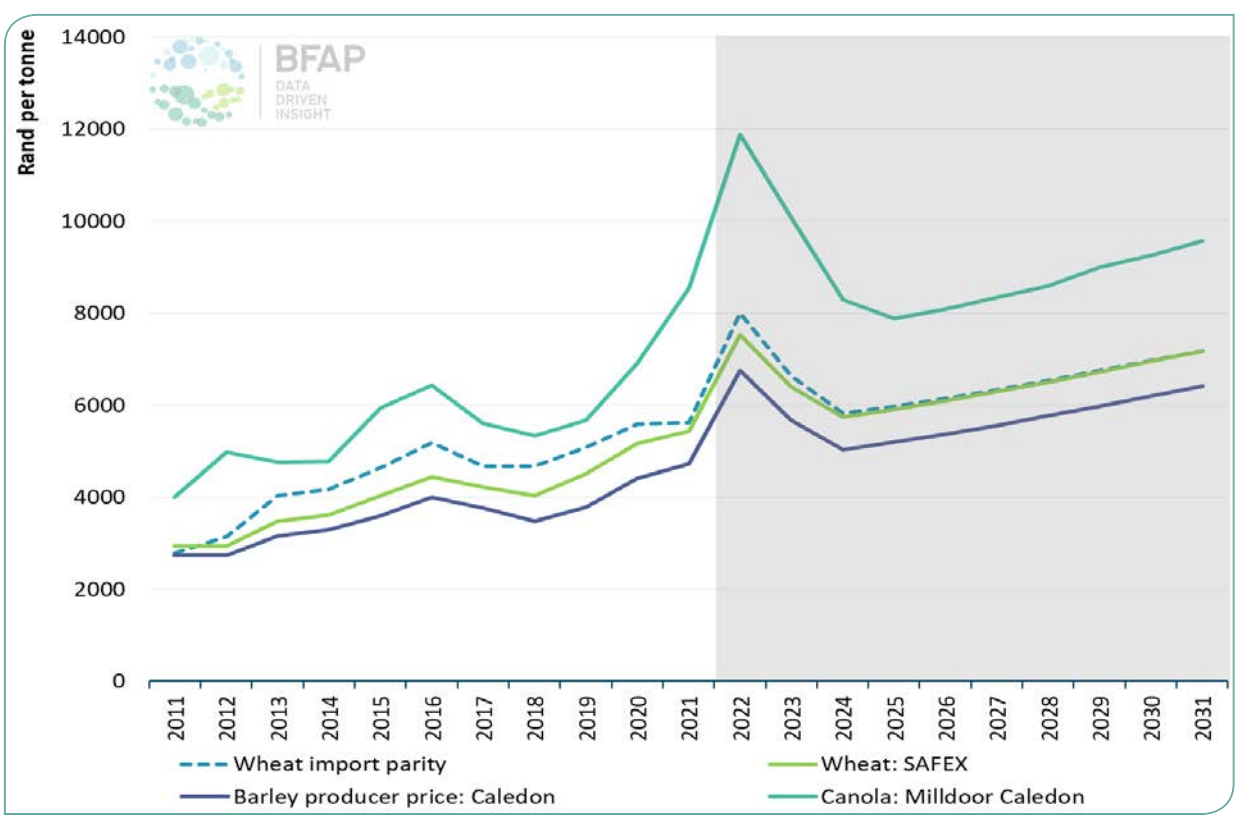


Figure 41: Winter crop prices: 2011-2031

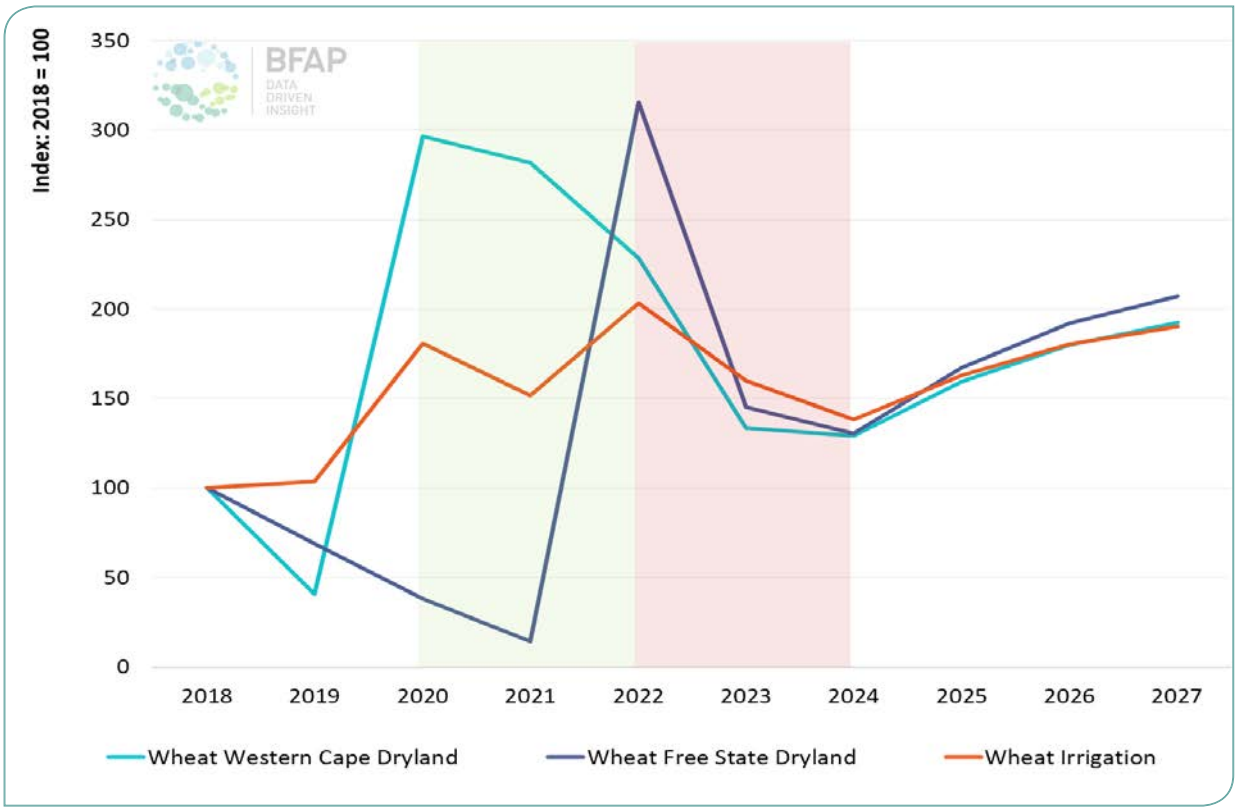


Figure 42: Gross margin performance index for wheat: 2018 - 2027

margins do not fall to the levels of 2018 and 2019, but in this higher input cost environment, risks around dryland production in particular are elevated as breakeven yields are higher. From 2025 onwards, margins start to improve, at least in nominal terms, as input costs also normalise.

It is clear that the past two years have been remarkable for most winter crops, as high prices coincided with favourable weather and strong yield performance. Since 2021 however, ongoing logistical constraints and elevated energy costs amid ongoing war in Ukraine have driven input costs up very sharply. A strong global supply response could drive agricultural commodity prices down faster than the prices of major inputs, which suggests that margins will come under more pressure and producer risks will be elevated in this higher cost environment. Well informed, innovative strategies and nimble decision making will be key to successful navigation of through turbulent period.

SUGARCANE AND SUGAR




World sugar prices increased by more than 88% between May 2020 and May 2022, largely driven by the ongoing drought in Brazil and higher crude oil prices. Increased sugarcane production in India and Thailand has to some extent compensated, and in early 2022 the USDA expected world sugar stocks to be in line with previous years. However, due to the high energy prices resulting from the Russia-Ukraine conflict, especially Brazilian sugar mills are channelling more cane towards ethanol. The OECD-FAO already projected in 2021 that the diversion of sugarcane towards ethanol will challenge sugar production.

The same OECD-FAO 2021 report projected an increase in global per capita sugar consumption over the next decade due to income gains and urbanisation in developing countries. Sugar consumption in Asia was foreseen to grow the most, with increased consumption in confectionary products and soft drinks. More subdued growth was projected for Africa, with increases based on population growth rather than higher income levels. Based on current economic indicators, the Ukraine-Russia situation, subdued economic growth in Asia, and higher projected energy costs, world sugar prices over the medium term will likely be driven more by energy prices than growth in consumer demand for sugar.

The higher world price has enabled South Africa to export sugar more profitably into international markets. However, less imports, a declining cane area coupled with a decrease in the average national yield due to milling capacity issues and cane losses due to arson in the July 2021 unrest in KwaZulu-Natal, resulted in minimal exports in 2021. Exports are expected to increase by 36% in 2022 and continue to increase in the near term, before stabilising and then declining further in the latter years of the outlook period to reach 407 000 tons by 2031. Over the outlook period domestic consumption is expected to increase on average by 0.7% annually, however an increase in the health promotion levy (HPL, aka the sugar tax) and proposed front-of-pack sugar content labelling will put downward pressure on domestic sugar consumption and as a result the local area planted to cane. Under the Sugar Masterplan a possible increase in the HPL has been delayed until 2023 but Government has already indicated its intention to increase the levy and possibly decrease the 4g/100ml threshold and expand the levy's scope to also include fruit juices.

Despite the higher international sugar price, the national cane area is expected to decrease over the next two years, largely driven by the increase in the fertiliser and chemical inputs costs and to some extent the damage to infrastructure in KZN following the devastating floods. Reduced milling capacity, following the closure of mills in recent years, will also contribute to a lower cane area, as the remaining mills struggle to crush the total cane crop. The impacts of the financial uncertainty surrounding Tongaat-Hulett will have on cane crushing and production is not clear, but the current situation is most likely not conducive to investment or maintenance expenditure on struggling mills.

Under the assumption that input costs will normalise to some extent after 2024, there is an expectation that the cane area can increase somewhat before trailing down

again. The expectation is that the industry will shed about 30 000 ha (-9%) to just over 316 000 hectares over the outlook period. Despite the decline in area, production is forecasted to increase slightly in the short term with improved cane varieties from the South African Sugar Research Institute contributing to improved yield potential and disease resistance. Both sugar and sugarcane prices are forecasted to increase on average by 2.4% on average per annum over the outlook period to reach R6927 (RV) and R796 per tonne by 2031, respectively.

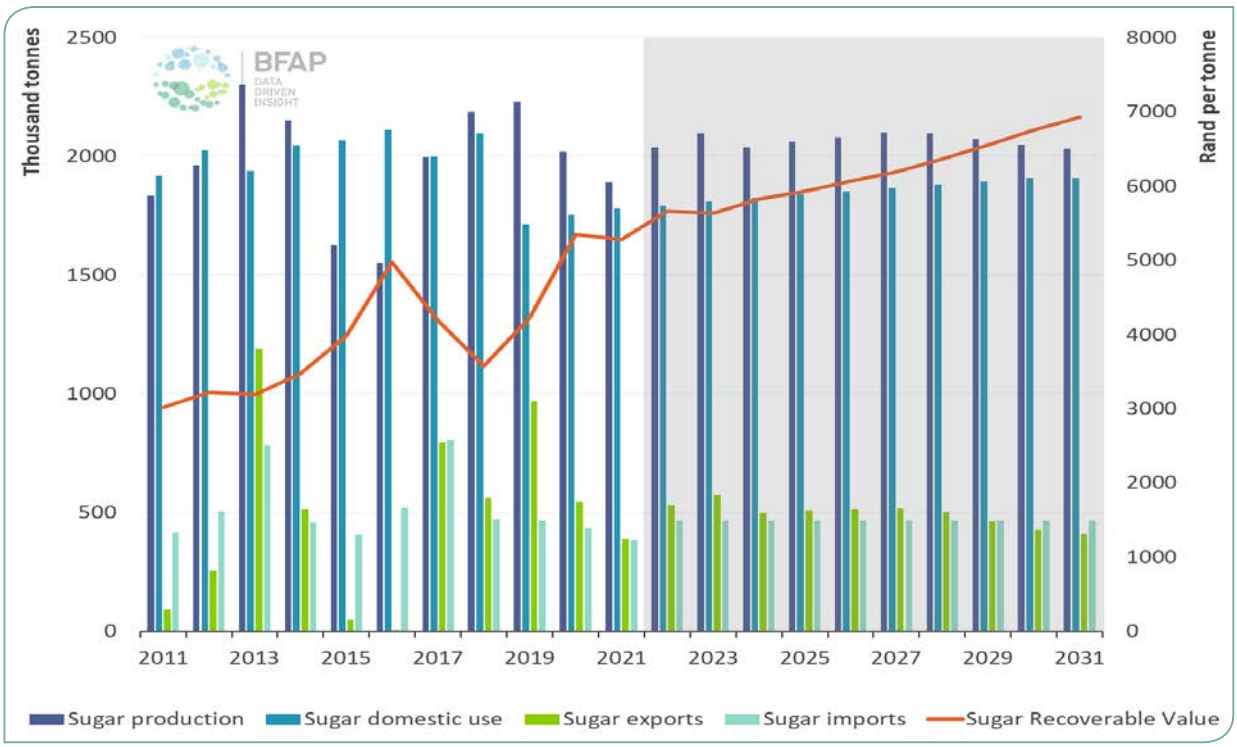


Figure 43: Sugar production, consumption, trade and recoverable value: 2011-2031

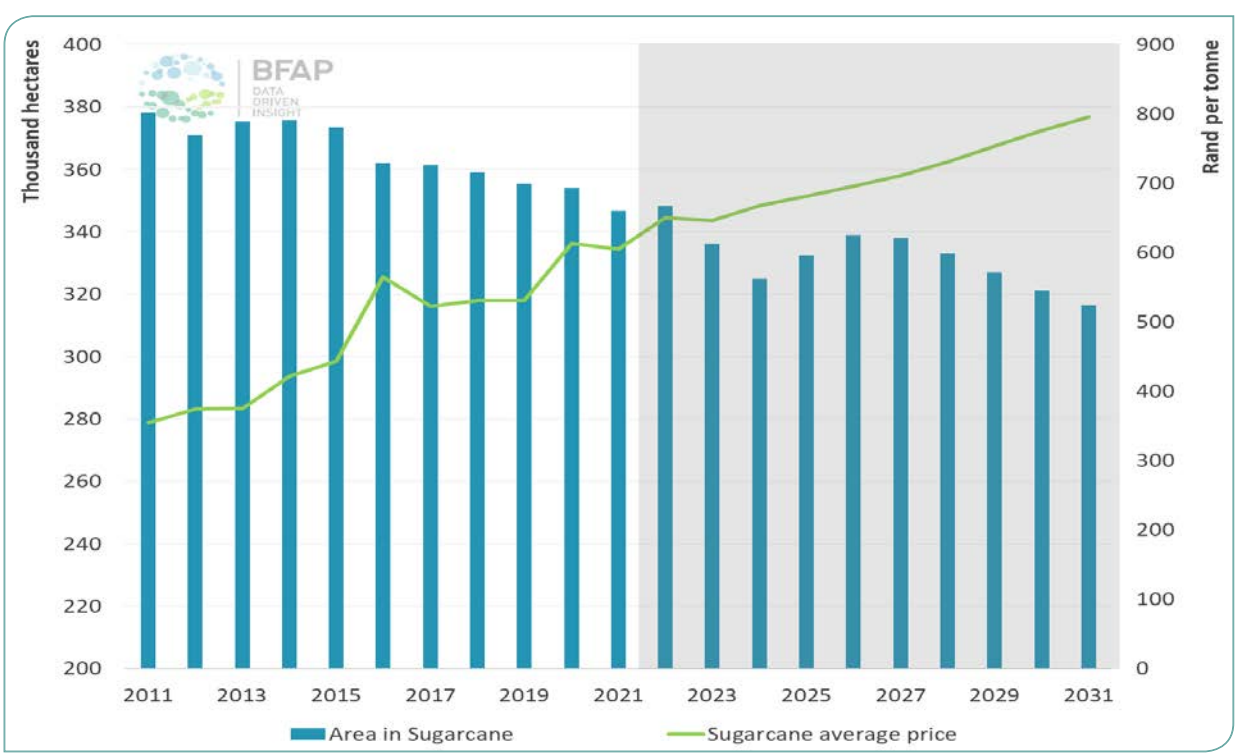


Figure 44: Sugarcane area and price: 2011-2031

OUTLOOK FOR ANIMAL PRODUCTS
MEAT, EGGS AND WOOL

MEAT: GLOBAL MARKET SITUATION

The FAO's meat price index shows that global meat prices have been trending upwards for most of the past 2 years. Demand weakened in early 2020 as economies were locked down in efforts to contain the pandemic but as restrictions were relaxed and economic stimulus packages kicked in, demand strengthened while for many meat types supply remained constrained, driving prices higher. In May 2022, the FAO meat price index was 14% up compared to May 2021, largely due to poultry and beef prices which increased by 25% and 21% respectively, while pork and sheep meat prices declined by 2% and 3% respectively over the same period.

A number of factors are influencing supply in the short term, including animal disease in the form of Avian Influenza (AI) and African Swine Fever (ASF), and supply disruptions from the Ukraine, which had become an increasingly prominent poultry exporter over the past decade. Furthermore, persistent increases in feed prices, which have accelerated following Russia's invasion of Ukraine, is constraining the profitability of feed intensive operations, leading to a reduction in supply.

In the case of pork and beef, one must consider the dynamics in China, which has been a major influencer of global meat markets in recent years, both in terms of supply and demand. In 2018, the outbreak of ASF decimated the Chinese pig herd, sending prices soaring and driving strong import demand for all meat types as consumers replaced pork with a range of alternative proteins. As China's pork supply started to recover, pork prices have come under pressure, despite rising feed prices. At the same time, demand for pork has not fully recovered as many consumers who diversified their meat consumption in response to the outbreak continue to consume beef. The share of pork consumption as a source of protein has declined to 50%, from about 60% prior to the ASF outbreak, while China's share of global beef imports rose from 7% in 2017 to 20% by 2021, surpassing the United States as the largest importer. As a result world pork prices remained subdued while beef prices reached record highs.

Given China's share in global consumption, it will remain an important driver of markets going forward and the evolution of its zero-COVID policy is an important consideration that increases uncertainty. Prolonged lockdown restrictions combined with high shipping costs could dampen demand for imports, thus dampening further price gains. Conversely, the continued spread of diseases such as ASF and AI in key production regions

could also exacerbate supply constraints, supporting prices. The OECD-FAO Outlook (2022) suggests that prices could decline over the next few years in line with feed materials as the global market normalises, before rising again in nominal terms over the latter half of the projection period. Given increased production and weaker demand growth in China, pork prices are projected to remain closer to poultry prices over the outlook compared to historical trends (Figure 45).

At a global level, meat demand growth is expected to slow in the coming decade, but expectations diverge across regions. In the higher income nations diets may continue to shift towards greater inclusion of healthier and more sustainable food products. Consequently, little per capita consumption growth is projected for animal protein in those countries. Conversely, in many developing upper middle income regions per capita consumption is still expected to rise strongly as incomes grow. By contrast, affordability remains limited in many least developed nations, despite growing income levels, leading to limited growth in per capita consumption. In Sub Saharan Africa, population growth rather than per capita income gains will drive growth in total consumption. Owing to its relative affordability in the meat basket, few cultural and religious inhibitions and generally favourable health characteristics, poultry's share in total meat consumption is projected to continue rising.

Meat production globally is projected to reach 377 million tonnes by 2031 – growth of 15% compared to the 2019-21 base period. This is driven predominantly by poultry and pork, where production is projected to grow by 16% and 17% respectively. In the case of pork, this involves a significant recovery in Asia from the ASF induced lows of recent years. Beef production growth is projected to be slower at 8% over the 10 year period. Growth will need to be derived from a combination of herd expansion and productivity gains. With distinct differences across regions in terms of resource base to enable expansion and scope for productivity gains, international trade will be critical, with Latin America expected to play an increasingly important role as surplus producer. In the face of rising uncertainty from animal disease outbreaks and climate change, the role of trade in smoothing region-specific supply shocks could become increasingly important over time (OECD-FAO, 2022).

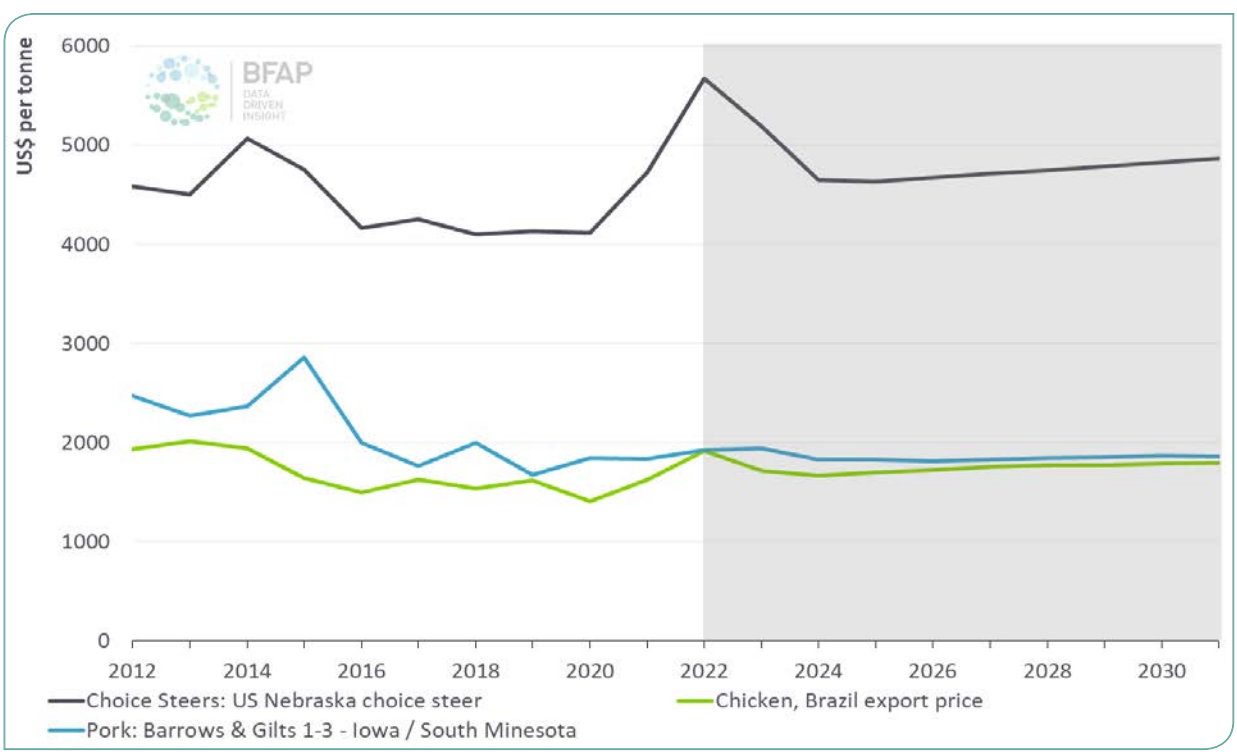


Figure 45: International meat prices: 2012-2031
Source: OECD-FAO, FAPRI & BFAP, 2022

DOMESTIC MARKET OUTLOOK: MEAT

As a small player, South African meat markets mirrored global trends over the past 2 years, reflecting high levels of integration in international markets, along with common influencers on demand and supply. One such factor is the COVID-19 pandemic, which induced a slump in prices in early 2020 following temporary closure of the food service sector. As the economy started to open up, demand firmed, particularly for supermarket sales, supporting price gains when combined with limited supply. In 2021, prices in South Africa's largest meat subsectors, poultry and beef, increased by 12% year on year. In both sectors, the sharp increase in international prices was a contributing factor. In the case of beef, reduced supply exacerbated the increase, following a 1% reduction in slaughter volumes from already reduced levels in 2020.

Over the first 5 months of 2022 beef prices rose by a further 11%, as supply remained constrained amid persistently high feed prices and ongoing Foot and Mouth Disease outbreaks that inhibit increased feedlot stocking rates. Local poultry prices have risen but to a much lesser extent, at 5% over the same 5 month period and primarily in response to higher prices globally, combined with sharply increased feed costs. By contrast, pork prices have remained fairly stable over the first half of 2022, reflected greater stability in global pork prices relative to other meats, along with rising slaughter volumes that already supported a 14% year on year increase in production in 2021. Producer margins have come under severe pressure across most livestock sectors in 2022 on the back of spiralling feed costs, but owing to the intensive nature of production systems, pork, poultry and feedlot producers have been particularly hard hit. This suggests that supply is unlikely to respond quickly to the current high price environment, which may prolong it, despite rising pressure on consumer spending power.

Meat is considered to be a luxury product within the consumption basket of most South African consumers. Consequently, demand is sensitive to both changes in consumer spending power and rising prices. This is evident in Figure 46, where current per capita consumption levels for different meat types are compared to levels 20 and 10 years ago together with a projection for 2031. Per capita consumption growth has slowed drastically, reflecting the impact of the poor economic growth and diminished spending power, which resulted in a regression of the class mobility seen over the past decade and was further exacerbated by the COVID-19 pandemic and the unrest in KZN and Gauteng in July 2021. This is expected to remain the case in the short term, as the ongoing impact of the war in Ukraine and subsequent increases in fuel, energy and distribution costs drive inflation higher, weakening disposable incomes. The stagflation environment points to a fallback to more affordable meat types for consumers who had previously started to diversify meat consumption – hence poultry consumption remains stronger than other meat types. Over the medium term, consumer spending power is expected to improve, but slowly and, with many consumers having regressed from upper middle to lower middle income groups in the recent past, affordability and value for money will remain critical consumption drivers. Consequently, per capita consumption gains are expected to be the greatest for poultry, where it is expected to increase by 2.3kg by 2031 compared to current levels. Beef and pork consumption per capita are also expected to rise by 0.8kg and 0.4kg respectively by 2031. Pork provides an affordable alternative to beef products for consumers under budgetary pressure, but it remains more expensive than poultry and is less widely consumed historically. Beef offers a wide variety of cuts at various prices and is consumed across a broad spectrum of income levels. While some lower income consumers may consume more pork and poultry at the expense of beef, others may switch from more expensive red meat such as lamb back into beef, resulting in a further decline in sheep meat consumption per capita over the coming decade.

Figure 47 presents total consumption growth over the coming decade and provides insight into various supply channels. Consumption growth presented in Figure 46 suggests that poultry will increase its dominance in the total meat consumption basket. Further to the marked slowdown in consumption growth, the industry has also been challenged by rising imports over much of the past decade, with the share of imports in domestic consumption peaking at 26% in 2017 and 2018 before declining. Increases in the general import duty, the imposition of a safeguard duty against imports originating from the EU, and the renewal of anti-dumping duties on bone-in chicken imports from the United Kingdom, the Netherlands and Germany all contributed to the decline, while AI outbreaks in various countries and increased shipping and logistics costs further constrained import volumes. Commitments made in the Poultry Master Plan induced investments in expanding domestic production and has the potential to drive a further reduction in the share of imports over the Outlook, whilst

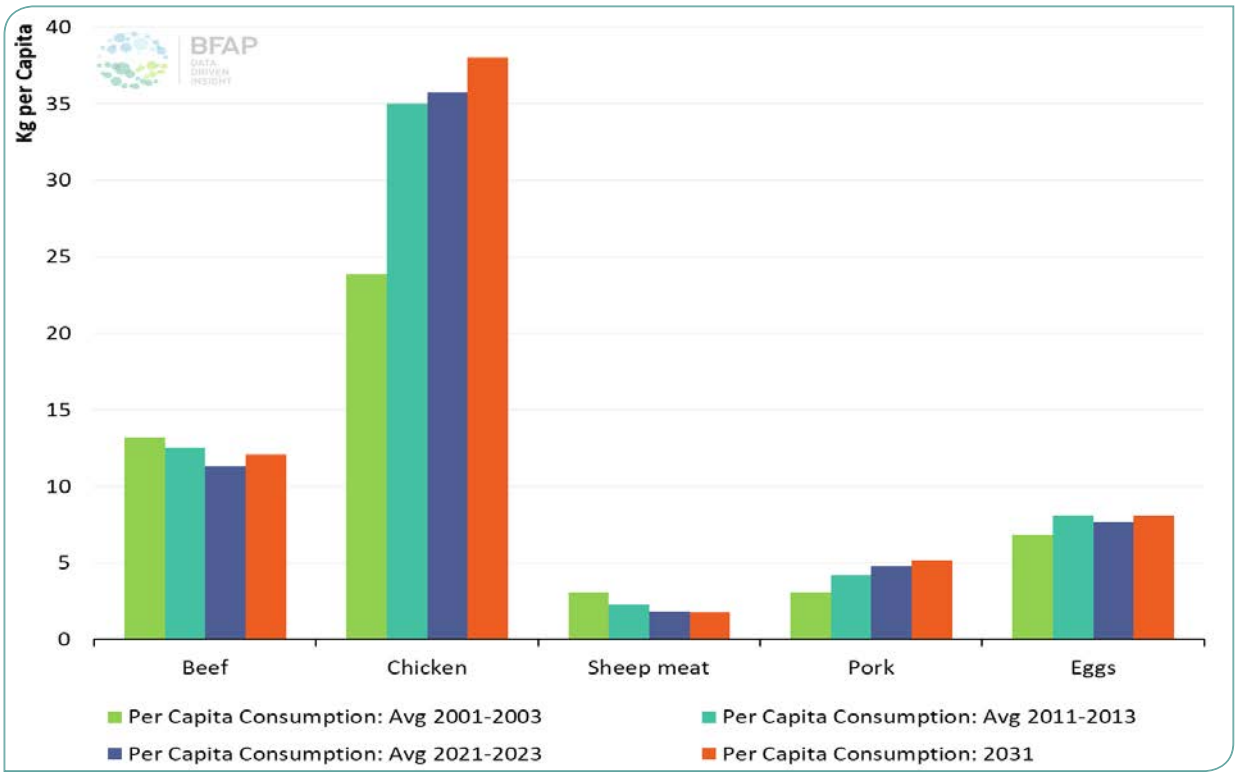


Figure 46: Growth in per capita demand: Outlook vs. history

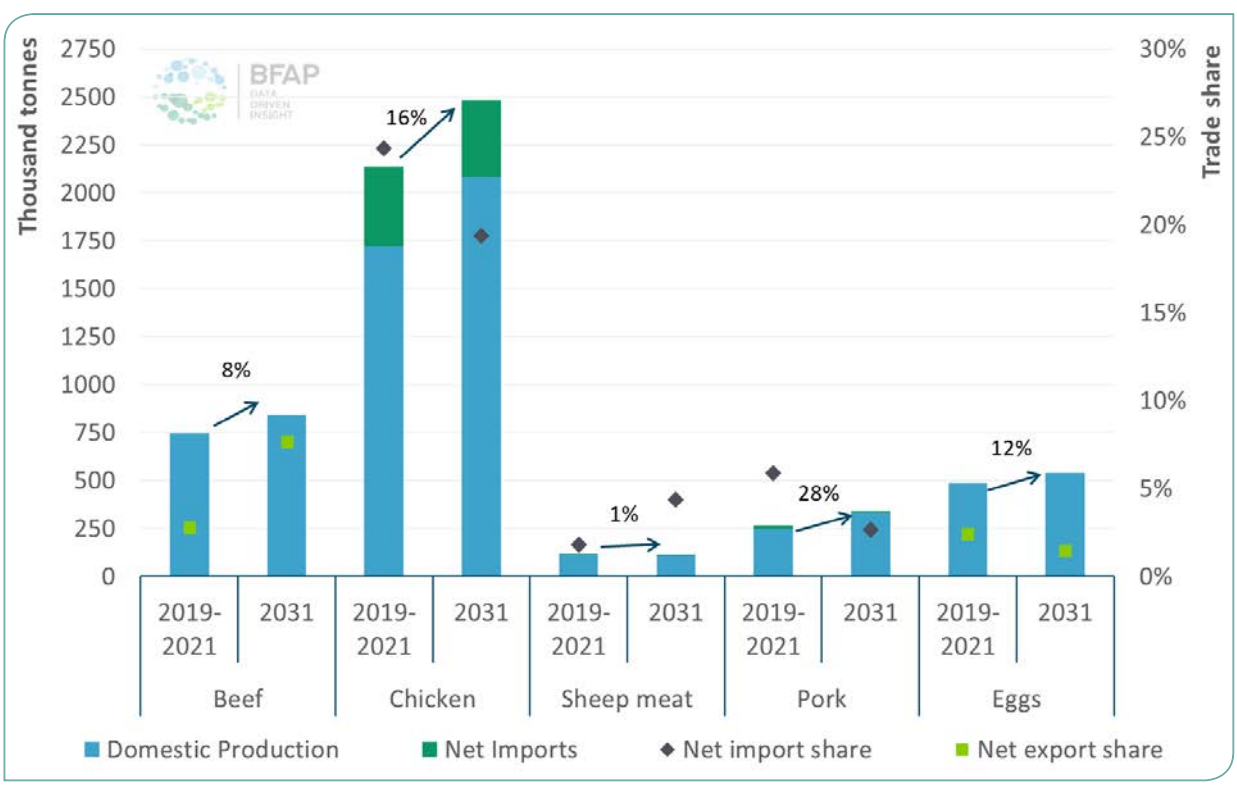


Figure 47: Meat consumption growth: 2031 vs. 2019-21 base period

also offering opportunities for enhanced transformation of the industry. In the short term however, the sharp increases in production costs, resulting mainly from feed price increases, but also other material such as heating and distribution costs, along with service delivery challenges in many municipalities are placing the sustainability of these investments at risk.

Figure 48 shows that the chicken to maize price ratio has fallen to levels last seen in 2015. This ratio presents a basic indicator of profitability, given that feed accounts for roughly 70% of production costs and maize is the primary source of energy in most feed rations. Under baseline assumptions, which sees feed grain prices start to decline from 2023 onwards, the chicken to maize ratio is expected to bottom out in 2022 at an average level slightly above that of 2016 at the height of the drought. It is projected to reach an equilibrium at levels similar to 2019, sufficient to induce production growth of 1.7% per annum on average over the 10 year period. While the relative stabilisation of this ratio compared to the past reflects the assumption of stable weather conditions, the reality is that this represents an average outcome and it will remain volatile around this level as weather conditions fluctuate over the projection period.

Eggs provide an affordable and accessible source of protein to South African consumers and consumption is projected to grow by 12% over the outlook period. The industry faces many of the same challenges as broiler producers, in that feed is the major contributor to production costs and hence profitability has come under severe pressure. However, it does not face the same extent of competition from imported products and prices are much more sensitive to domestic supply and demand fluctuations, as opposed to international market dynamics. This was clearly evident following the outbreak of AI in 2017, which decimated supply and led to large price increases. As production increased, firm demand through the COVID-19 pandemic supported prices, as consumers' buying and cooking habits changed. Going forward, egg to feed price ratios follow a similar trend to poultry, but production growth is slower at 1.4% per annum, reflecting the ever-present risk of AI.

While AI affects the entire poultry industry, the risk is amplified for egg producers whose birds have a longer productive lifecycle compared to broilers, and therefore face increased risk of contracting the disease. Following the outbreak of AI in 2017, it took the industry the better part of 3 years to recover. With improved bio-security measures as well as

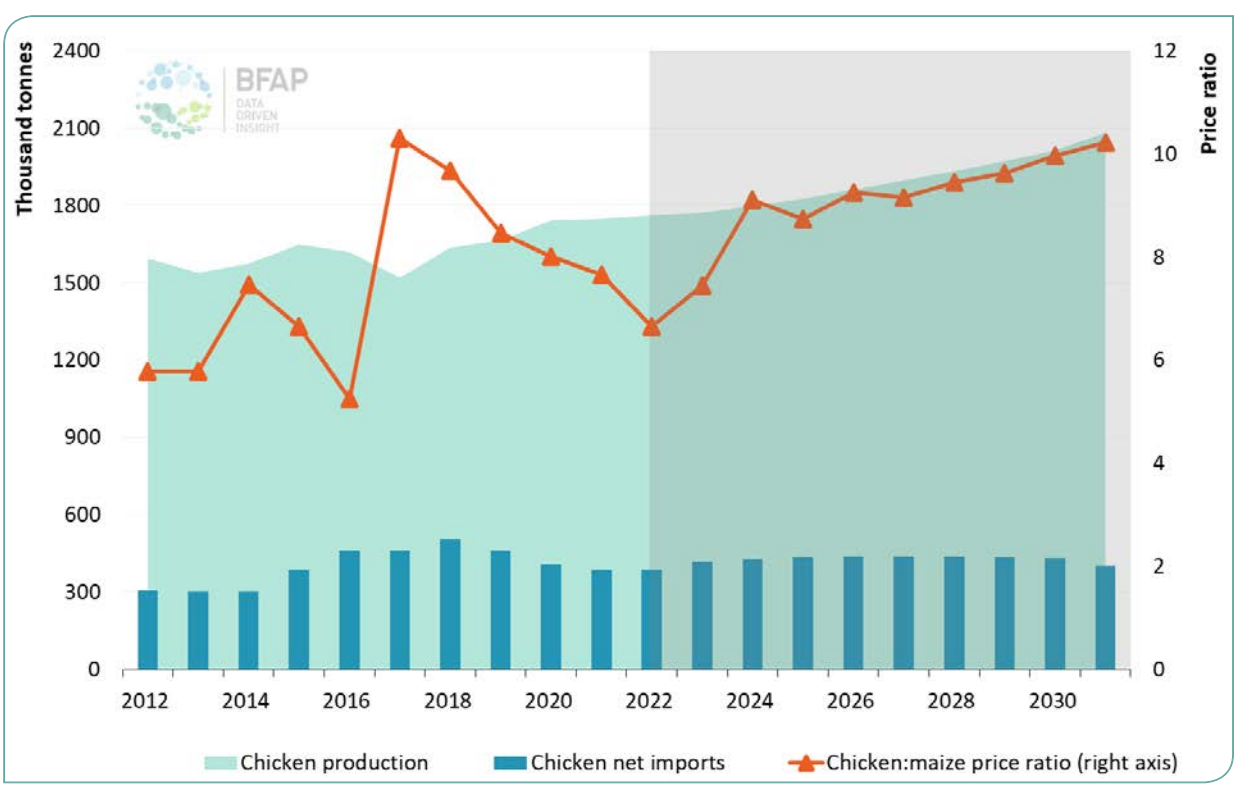


Figure 48: Chicken production, imports and profitability: 2012-2031

superior response and management procedures the 2021 AI outbreak has been less severe, but, with culling the only option if an outbreak does occur, the risk to producers is significant. This is even more relevant for emerging producers who are not always able to keep the same degree of biosecurity standards due to less secure production systems.

Pork is another industry challenged by high feed costs, as it also relies on an intensive production system. While feed costs have increased at similar rates, pork prices have lagged that of other meats, implying that profitability has come under severe pressure. Figure 49 indicates that the pork to maize ratio has declined to levels similar to 2016 and, despite having a longer production cycle than poultry, production is expected to contract in 2022. To remain in business under current conditions, producers will need to be innovative and nimble in gaining maximum efficiency to ride out the high feed cost cycle. After bottoming out in 2022, the pork to maize price ratio is expected to improve over the next 2 years, to stabilise at a level similar to 2019 from 2024 onwards. This is sufficient to induce a positive trend in production, with average annual growth of almost 2% from 2023 onwards following the initial contraction in 2022.

While it counts amongst the smallest of the meat sectors (Figure 47), the pork industry provides an affordable product and has seen substantial growth over the past decade, expanding by 40% from 2011 to 2021. Relative price movements are such that its affordability compared to other meats is increasingly attractive over the outlook, supporting consumption growth of 28%, albeit from a small base. The share of imports in total consumption is expected to decline over time, but remain prevalent, as South Africa imports mainly ham and ribs, thus fulfilling a balancing role in the market for specific parts of the carcass.

ASF continues to be the biggest animal disease threat to the pork industry. However, the nature of production systems has enabled the industry to adopt world class biosecurity measures at producer level. Clinical monitoring of animals and application of the World Organisation for Animal Health's compartmentalisation control method safeguards producers against the spread of the disease and ensures that the virus is not exported to neighbouring countries. ASF has been endemic in South Africa for some time and while it does represent a concern that must be managed carefully, the industry has managed to grow strongly in the past despite its prevalence and is expected to manage further outbreaks accordingly in the future. Again, the risk for ASF for small producers are greater as they struggle to implement the same biosecurity standards at producer level.

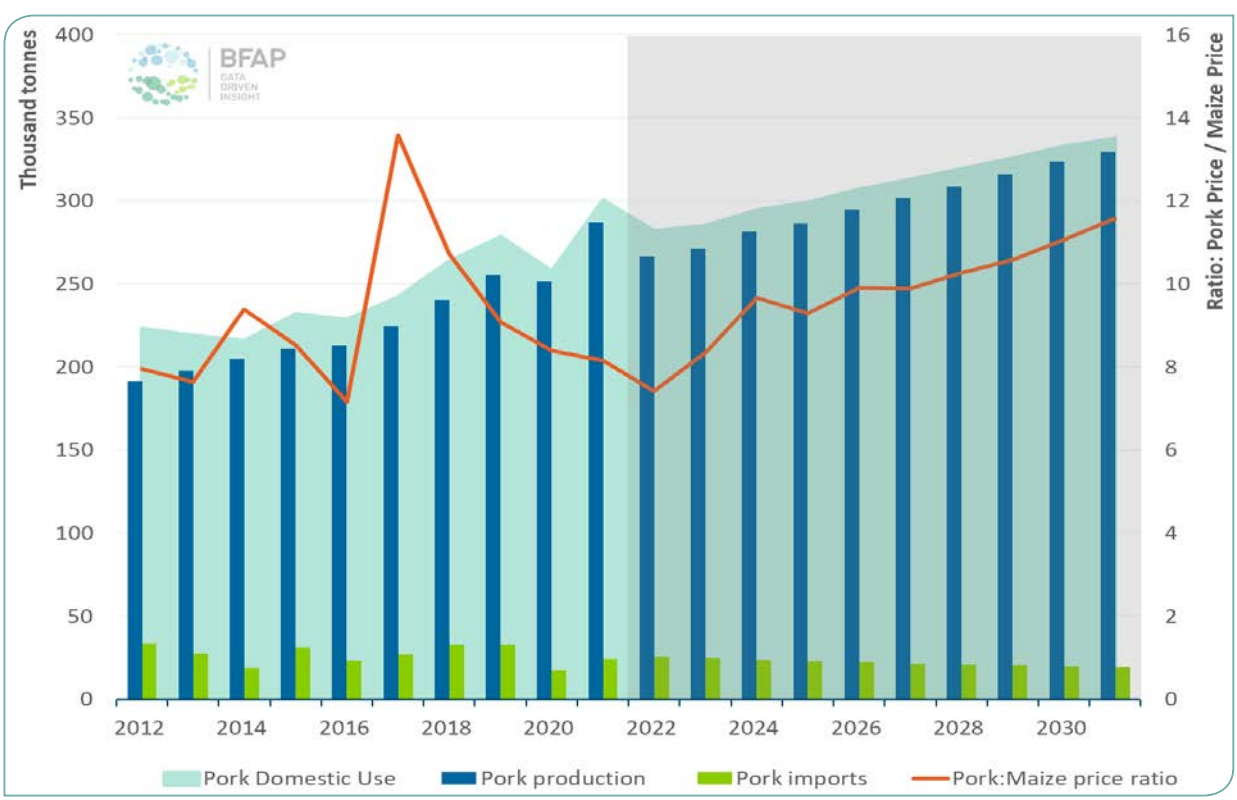


Figure 49: Pork production, consumption, trade and profitability: 2012-2031

The red meat industry has made great progress in growing exports in the last decade, using it as a springboard to sustain production in an environment where domestic consumption came under increasing pressure. This success is now in jeopardy due to several challenges, the most current of which is the ongoing FMD outbreak. The formerly recognised FMD free zone lost its status in 2019 and the industry has failed to regain it since. Although South Africa has continued to trade through bilateral agreements, recent outbreaks have resulted in some trade partners such as China banning exports of beef from South Africa. Other factors influencing export prospects across the red meat sector are protocols (particularly animal welfare protocols) for the export of live sheep to the Middle East, lack of implementation of the national traceability system and the shortage of vaccines at Onderstepoort Bio Products (OBP). These have contributed to the continued production constraints in 2021 and 2022, and are the core drivers of the projected slowdown in beef export growth over the coming decade (Figure 50). Under baseline assumptions, which include the vital ability to continue exporting to key markets in the Middle East under bilateral agreements, 8% of total production is projected to be exported by 2031. Given the prioritisation of interventions to address animal health and export related challenges in the recently signed Agriculture and Agro-processing Master Plan (AAMP), successful implementation has the potential to increase this share to 20%.

Despite growth in exports, the ongoing cycle of herd rebuilding following initial herd liquidation through the 2015/16 drought and further dry spells in 2018 and 2019 has resulted in lower slaughter numbers in recent years. Like other livestock sectors, the industry is facing difficult circumstances in 2022 due to rising feed costs. Along with previously mentioned disease related concerns, this has constrained stocking rates in feedlots, contributing to production constraints in 2021 and 2022, despite high prices. A key factor contributing to the prolonged period of herd rebuilding in the recent past has been good profitability in summer grain production, which has enabled more aggressive cattle herd rebuilding in mixed farming operations. These production gains are expected to enter the market in the next few years, with production expected to start increasing from 2023 onwards, as feed prices start to decline.

The beef to maize price ratio is projected to improve, stabilising above 2019 levels, but below the peaks of 2017 and 2018 (Figure 50). This is also expected to enable feedlots to pay more for weaner calves, inducing a gradual decline in the beef to calf price ratio over the projection

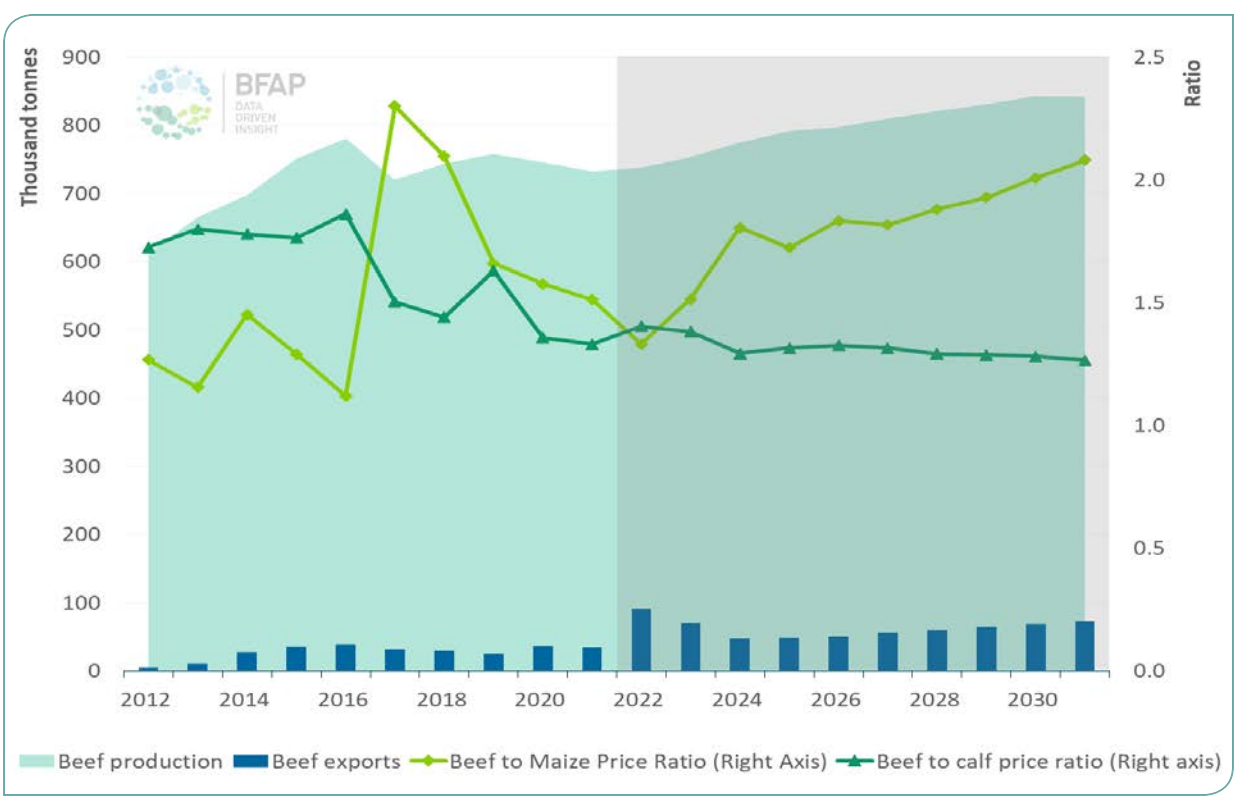


Figure 50: Beef production exports and profitability: 2012-2031

period. Supported by improved weaner availability and better feedlot profitability, beef production is projected to expand by 16% by 2031.

The sheep industry has also driven an export led strategy in recent years, as its relatively high cost compared to other meat types has resulted in a persistent decline in consumption levels in South Africa. This is expected to persist over the outlook, making the industry even more reliant on exports to enhance growth. In the case of sheep, such exports have occurred in the live animal market, leading to a reduction in domestic slaughter volumes. These exports have since declined amid opposition from the NSPCA, FMD concerns and a lack of certainty around South Africa's guidelines for the transport of live animals by sea. Whether South Africa will once again reach the peak witnessed in 2019 is not clear, but for the time being the Middle East will again look to Australia rather than South Africa for sheep imports.

Animal diseases will remain a great concern in the livestock industry and the situation is exacerbated by the shortage of veterinary health professionals in the country. The international norm is to have between 200 and 400 professionals for every million people; in South Africa there are between 60 and 70 veterinary professionals for every million people. This results in inadequate services being provided to small and communal producers, posing a great risk for the country's biosecurity and growth prospects. It also continues to influence export markets, not only for meat, but also products such as wool. The wool industry is a leading contributor to agricultural exports for South Africa and supports the livelihood of an estimated 40 000 communal farmers. Amid the recent outbreak of FMD, China has, for the second time in 5 years, banned imports of animal products from South Africa, effectively closing the largest market for one of South Africa's most successful sectors in recent years.

CONCLUDING REMARKS

The animal sub-sector is experiencing one of the most challenging periods in recent history. Although the price of some animal products has risen in the last two years, profits are under severe pressure in the face of sharply increased input costs. Meat to maize price ratios have dropped to levels last witnessed during the 2015/16 drought. With the slow recovery from the COVID-19 pandemic and recent and anticipated interest rate hikes to manage surging inflation, producers will have to practice good management skills to ensure a share of consumers' disposable income.

Amidst the challenges mentioned in this chapter, animal diseases and the public sector's inability to manage and prevent outbreaks are the greatest threats to the growth of the South African meat industry. In the last year South Africa has experienced FMD outbreaks in five of the nine provinces, whilst also battling AI and ASF outbreaks. Failure to address disease management constraints through improvement in animal health services is costing the industry and the country billions of rands in lost exports and South Africa is missing out on what is perhaps one of the greatest opportunities for inclusive growth in agriculture.

MILK AND DAIRY PRODUCTS

INTERNATIONAL MARKET OVERVIEW

The global dairy sector was resilient through the COVID-19 pandemic, which had a relatively modest impact (MPO, 2022; OECD-FAO, 2022). Some challenges experienced amid the pandemic include supply chain disruptions in the form of transportation and staffing limitations due to lockdown and travel restrictions across the world (MPO, 2022). The pandemic impacted butter comparatively more than other dairy products due to the loss of demand from the hospitality sector in mid-2020, resulting in a sharp decline in butter prices. In 2021 however, as economies opened up and demand strengthened, especially from Asia and the Middle East, dairy product prices increased. The combined FAO Dairy Price Index grew by 17%, with price increases across all dairy products. Prices for butter (30%) and whole milk powder (WMP 27%) grew the most, followed by skim milk powder (SMP 22%) and cheese (8%) (OECD-FAO, 2022). Increasing dairy product prices were backed by a combination of sustained import demand throughout the year, along with tight export supplies from major producing countries (MPO, 2022).

As supplies in the global market remain tight, prices continue to trend upwards and the FAO dairy price index was 20% higher over the first five months of 2022 than the same period in 2021. Of all dairy products, butter prices rose the most, in part induced by the current shortage of sunflower oil and margarine due to the ongoing war following Russia's invasion of Ukraine. Global SMP and cheese prices also increased, backed by sustained internal demand and low inventories in Europe despite a decline in foreign purchases.

Dairy prices are and will likely remain exceptionally volatile, stemming from the small share of production traded internationally (7%), the predominance of a few exporters and importers and a constraining policy environment. The OECD-FAO Agricultural Outlook projections reflect the assumption of stable weather conditions and should therefore be interpreted as an average, acknowledging that significant volatility will remain around the baseline. Nominal butter and SMP prices are expected to remain high in the short-term, before normalising towards 2024. The price gap between butter and SMP, which has been high since 2015 due to a higher demand for milk fat, is projected to narrow over the coming decade but remains a defining feature over the outlook period (OECD-FAO, 2022).

Global dairy production is expected to increase by 1.8% annually and faster than most other major agricultural commodities, to reach 1060 million tons by 2031. World milk production will increase by 43% for high-income

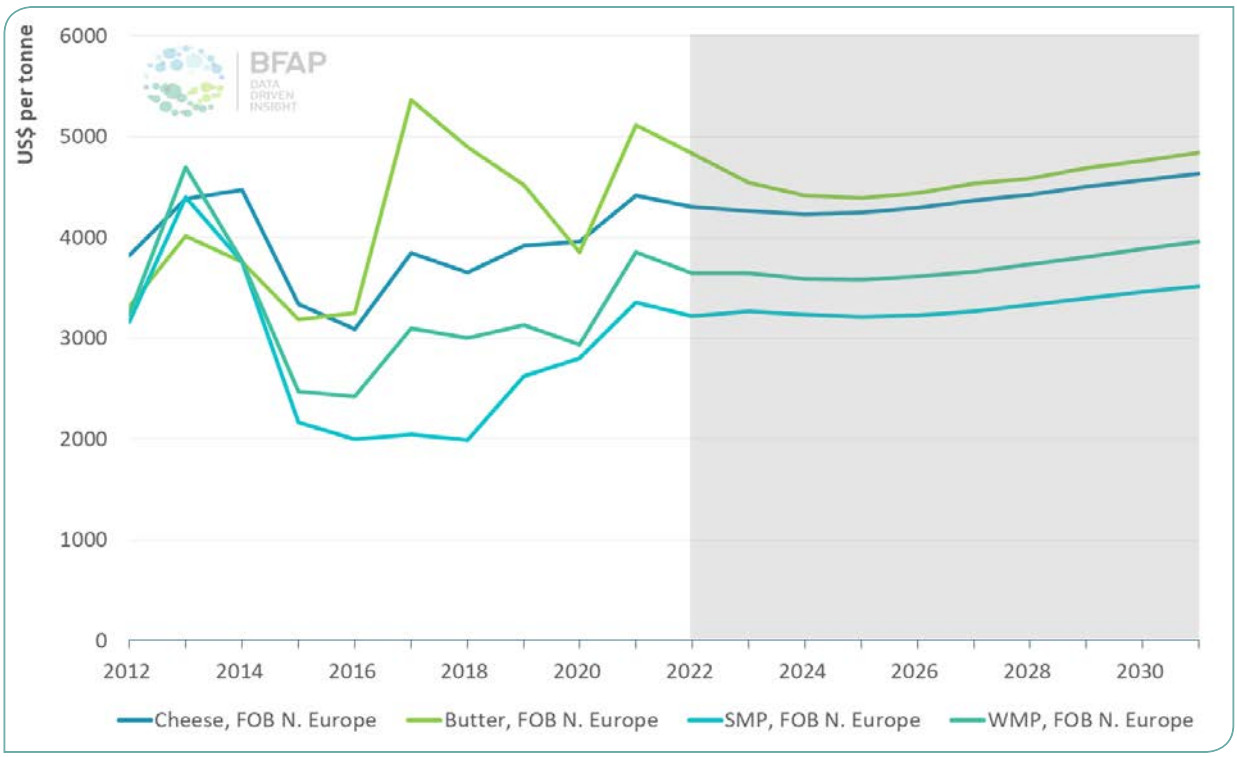


Figure 51: Dairy product prices: 2011 – 2031
Source: OECD-FAO, 2022

countries and 40% for low and lower-middle-income countries. An increase of 1.2% annually is expected in the number of milk-producing animals, centered in major milk producing countries such as India and Pakistan and in regions such as Sub-Saharan Africa. On the other hand, yield growth is expected to move steadily over the outlook period with considerable regional variation and driven mainly by optimising milk production systems, improved genetics, as well as animal health and feed efficiencies.

DOMESTIC MARKET OVERVIEW AND OUTLOOK

The COVID-19 pandemic had little impact on the domestic dairy sector in 2020, with only specific dairy products being affected and major products performing well under the circumstances (MPO, 2022). The total unprocessed milk production declined (0.71%) in 2021 owing to rising input costs. Poor profitability due to high feed prices (maize and soya) and adverse climatic conditions constrained production growth (MPO, 2022). Sale quantities of dairy products also declined at the retail level due to changes in the product mix and quantities bought by consumers during varying levels of lockdown. Furthermore, consumer preference and choice were influenced by slow economic growth locally, combined with rising unemployment and weaker disposable income.

At a primary production level, the total number of milk producers has been declining for some time and in January 2022, at 984, was 46% below the 1834 producers from 2015. Even so, total milk production increased by 7.2% between 2015 and 2021 from 3.1 million tonnes to 3.4 million tonnes. This suggests that while the number of producers has consolidated, scale has increased, enabling investment into technology and productivity gains, with these remaining producers contributing greater volumes (MPO, 2022) The secondary dairy sector constitutes processors operating nationally, regionally and in smaller specific areas, as well as milk producers who market their produce to retailers and consumers (producer-distributors). The number of milk processors and producer-distributors declined by 15% and 39% respectively between January 2015 and January 2022. However, the number remained steady in January 2022 compared to the same period in 2021, while processors increased by 2.3% (MPO, 2022).

Unprocessed milk production is largely concentrated in the coastal regions, including the Western Cape (30.6%), Eastern Cape (27%) and KwaZulu-Natal (27.8) which jointly constitute 85.4% of the total. The average milk yield per cow has remained volatile over the years, stemming from changing weather conditions and flexibility in feeding regimes, with the feed use intensity often linked to feed prices.

Producer prices increased throughout 2021 following international trends and were 12% higher on average compared to 2020. However, feed costs have also been increasing since 2018 and into 2021, offsetting the benefit of higher farm gate prices. According to the MPO (2022), costs such as electricity, fertiliser and building materials do impact on profitability, but feed remains the single highest cost component, contributing about 60% to total farm costs. Within typical feed rations, maize is the primary source of energy, thus the milk to maize price ratio provides a simple indicator of profitability.

The milk to maize price ratio has been declining and is expected to bottom out in 2022 as feed grain prices peak amid the ongoing war in Ukraine and challenging weather conditions globally. Some improvements are expected in 2023 and 2024, as world grain prices start to normalise, while the ratio reaches an equilibrium at levels similar to 2020. This is expected to enable production growth of 2.3% per annum over the ten year period, to exceed 4.2 million tonnes by 2031 (Figure 52). The lion's share of production will be purchased in the domestic market and limited volumes traded internationally.

Dairy products can essentially be divided into two segments. Liquid dairy products constitute around 61.6% of total use, where pasteurised liquid milk and ultra-high temperature (UHT) processed milk are the major products. Concentrated products account for 38.4% of total milk use and mainly comprise hard cheeses. Retail sales quantities for all dairy products declined in 2021 in comparison to 2020, except for pre-packaged cheese, which grew by merely 0.1%. Fresh milk (7.4%), UHT milk (5.2%) and cream cheese (5.0%) showed the largest decline in sales (MPO, 2022). The contraction in retail sales quantities is tied to rising prices at retail level, as well as changes in consumer behaviour regarding the product mix bought as lockdown restrictions eased.

In April and May 2022, BFAP conducted consumer research on behalf of the Consumer Education Project of Milk SA to investigate the impact of the COVID-19 pandemic on dairy intake in South Africa. Preliminary results of the study indicated that low and middle-income households reduced their intake of more luxurious dairy foods such as yoghurt and cheese during the pandemic, while affluent households increased their consumption of products such as butter and cheese. This corresponds to an increase in home-prepared meals. While the choice of products by low income consumers was driven mainly by sensory appeal,

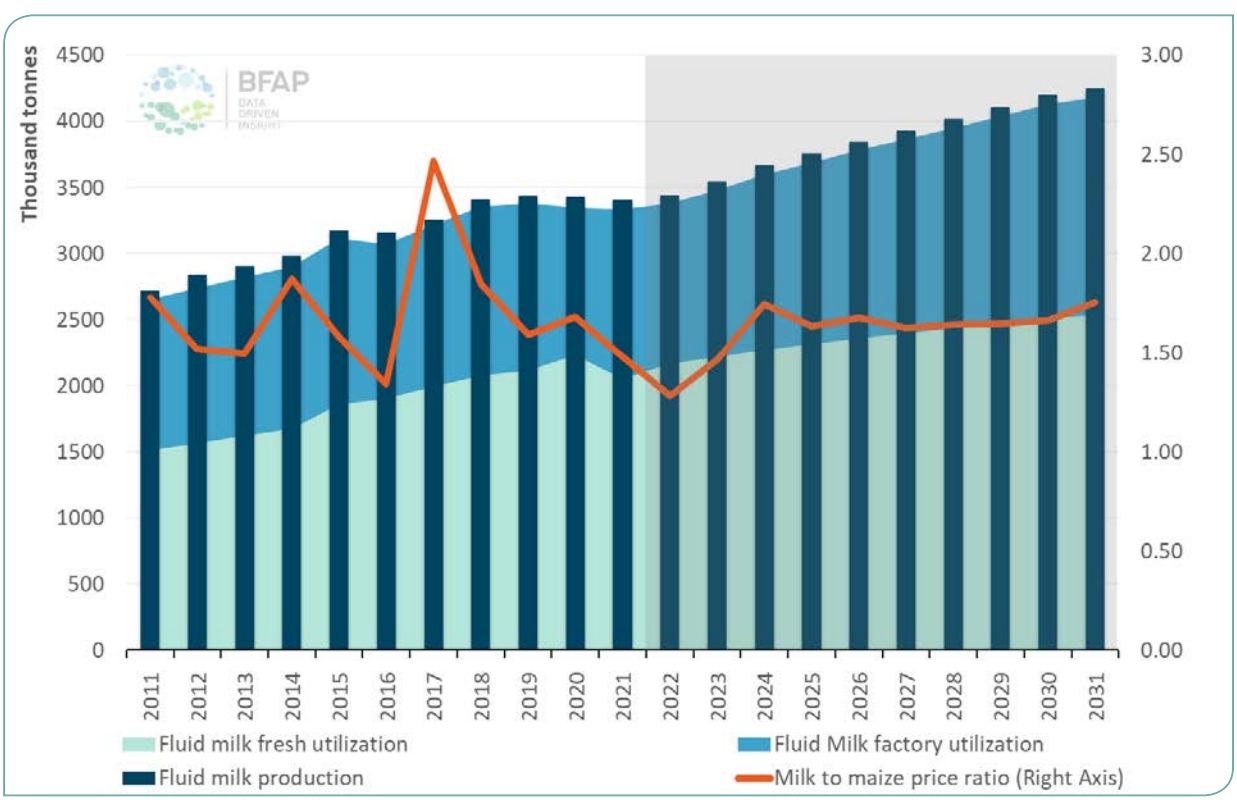


Figure 52: Milk production, use and profitability: 2011-2031

nutritional value, convenience, affordability and satiety, the product mix for middle income and affluent consumers was mainly based on long shelf life. As such, dairy intake by low income households moved towards products such as maas while middle-income and affluent households substituted fresh milk with long-life milk.

In line with growing production, dairy consumption is also expected to increase steadily over the coming decade. The utilisation of raw milk for liquid products is expected to increase by 19% over the coming decade relative to the average levels between 2019 and 2021. Fresh milk remains an important and affordable source of protein to lower income consumers and, while growth is still expected to be positive in the coming decade, it is much slower than the 42% observed over the past ten years. Processing into concentrated products will rise at a faster rate of 35%, implying that a greater share of total production will be processed into concentrated products by 2031. This is mostly driven by strong demand for cheese, where consumption is expected to rise by 46%. Butter consumption is also expected to rise by 27%, albeit from a much smaller base, whereas whole milk powder and skimmed milk powder is expected to rise by 47% and 42% respectively (Figure 53). Growth in products such as cheese and butter is largely derived from middle and higher income consumers, but is still expected to slow from growth rates observed over the past decade. This slowdown is most pronounced for butter, where consumption almost doubled over the past decade.

The South African dairy industry is it a critical contributor to food security, and production expansion has already exceeded the targets set for 2030 in the National Development Plan (NDP). In the processing space, it contributes to both value addition and employment in agro-processing. It possesses immense potential to support food security and inclusive growth through productivity gains amongst emerging producers, but in recent years it has been increasingly challenged by deteriorating service delivery and an ever-present risk of animal diseases. To unlock its potential and accelerate growth over the coming decade, a comprehensive strategy to protect herd health and biosecurity will have to be adopted through full implementation of the 2016-2026 South African Veterinarian Strategy and an animal identification and traceability system. Furthermore, service delivery and the maintenance of infrastructure at municipal level needs to be addressed urgently in order to improve competitiveness across the value chain.

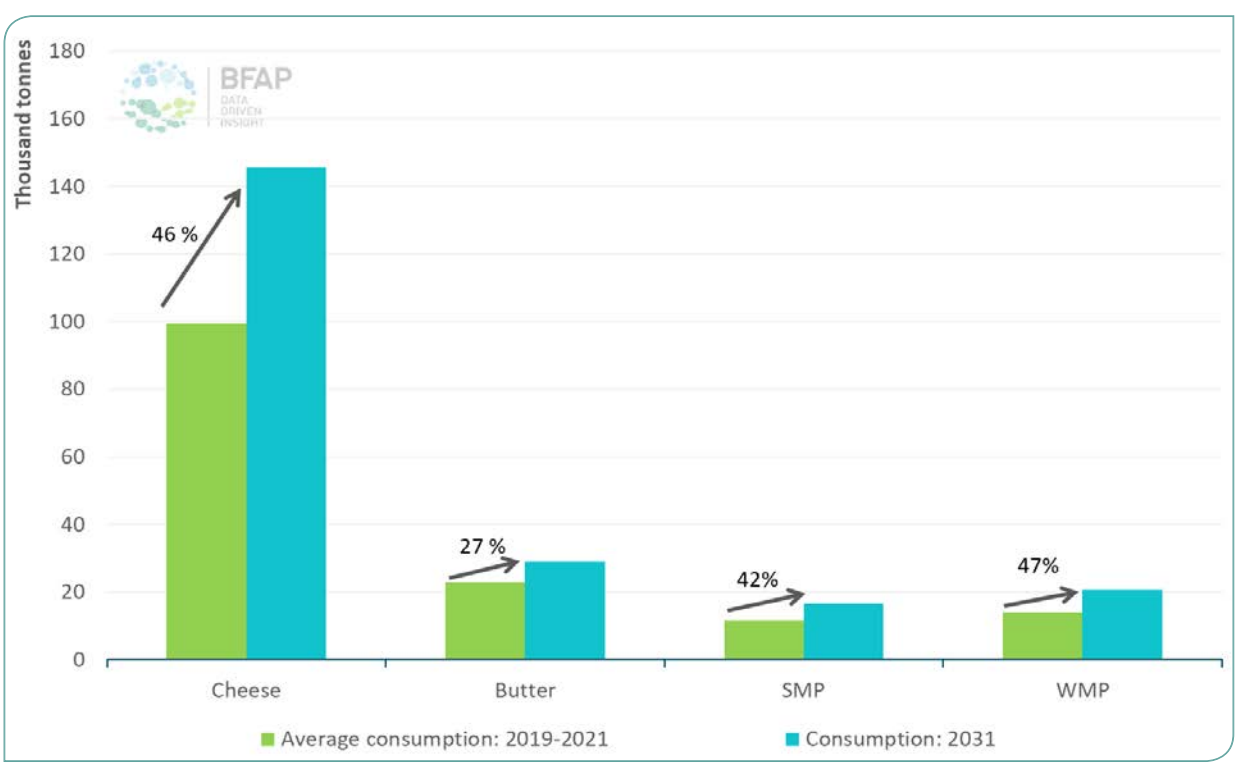


Figure 53: Consumption of concentrated dairy products: 2031 vs 2019-2021 average

OUTLOOK FOR HORTICULTURAL PRODUCTS
POTATOES

INTERNATIONAL MARKET OVERVIEW

World potato production has increased by 1.2 % from 2019 to 2020 to 359 million tonnes. China (78.1 million tonnes, 21.8% of world production), India (51.3 million tonnes, 14.3%), Ukraine (20.8 million tonnes, 5.8%), Russia (19.6 million tonnes, 5.5%) and the United States (8.79 million tonnes, 5.2%) were the top potato producers and consumers in 2020 (FAOSTAT, 2022). Global potato production is facing uncertain times due to the ongoing war in the Black Sea region following Russia's invasion of Ukraine. Combined, Ukraine and Russia contributed 11.3% of global potato production in 2020, primarily for domestic consumption. According to the Ukrainian Potato Growers Association, many producers in areas to the east, south and around Kiev were unable to plant potatoes for the coming season due to the invasion during the Ukraine planting season. The biggest hindrance to planting was the discovery of mines and unexploded bombs in fields in these areas and the limited labour force due to the evacuation of up to a third of Ukraine's population. Potato production systems are input-intensive, therefore the sharp rise in prices of key inputs such as fuel and fertiliser globally, which had started prior to the war, but has been accelerated by the war, could also bring potato production under pressure in various countries.

DOMESTIC OUTLOOK

South Africa's potato area is projected to decrease by 4.7% to 49 900 hectares in 2022, despite a 4.1% year on year increase in the nominal price to R49.69/10 kg bag. This is expected to induce a 2.8% reduction in production from 2.6 million tonnes in 2021 to 2.5 million tonnes in 2022. The short term decline in area can be attributed to the increase in input cost, specifically fuel and fertiliser, faced by potato producers in 2021 and 2022 - fuel and fertiliser account for 25% of producers' input costs on average. Once global input markets start to normalise, the area is also expected to stabilise, and is projected to expand by an annual average of 0.2% over the coming decade, a similar rate to that observed over the past decade. This enables area cultivated to potatoes to reach 51 400 hectares by 2031 (Figure 54). Production growth is projected to comfortably exceed that of area, growing by an average of 1.7% per annum to reach almost 3 million tonnes by 2031. This is in line with historic trends and enabled by average annual yield improvements of 1.5%. By 2031, the average yield at national level is projected to reach 57.5 tonnes per hectare. Yield increases are primarily driven by factors such as cultivar development, improved production practices and better plant protection products.

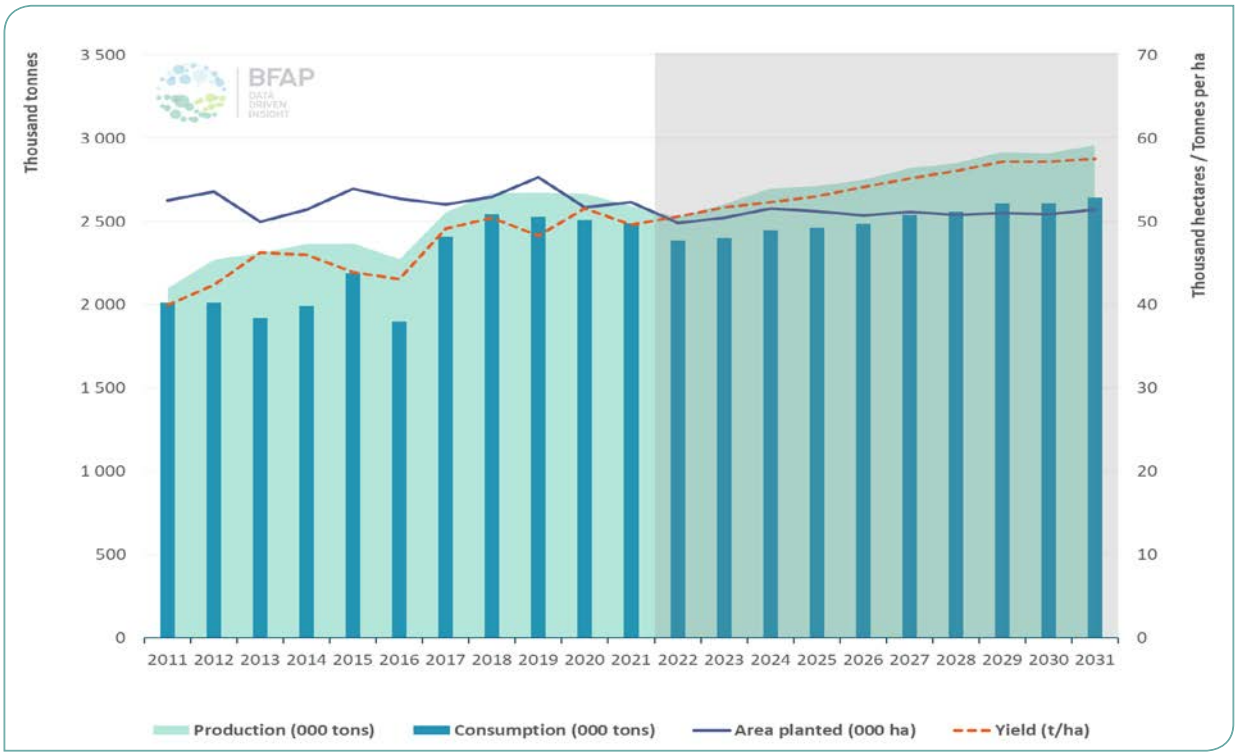


Figure 54: Potato production, consumption, area and yield: 2011 – 2031

From a consumption perspective, demand has decreased moderately for three years by an average of 0.7% p.a. and is projected to decline for a fourth consecutive year in 2022, to 2.38 million tonnes. The accelerated decline in consumption reflects constraints in consumer spending power, and is exacerbated by the rising prices. Domestic use comprises fresh formal and informal consumption as well as processing (potato chips and crisps). In 2021 the anti-dumping tariffs on imported frozen potato chips expired, leading to an 81% increase in imports from 32 000 tonnes in 2020 to 58 000 tonnes in 2021. Even with the increase, imports still only account for 14% of the processing market. During the outlook period, total consumption is expected to increase by an average of 1.2% per annum to reach 2.64 million tonnes by 2031, driven by an increase of 1.3% in fresh consumption, 1.6% in processing and constant seed use volumes due to the fairly stable area.

The potato price is highly sensitive to various volume changes in the market – whether it be a change in supply or demand. In 2022, nominal prices are expected to average R49.69/10kg bag, with normal seasonal variation as various regions deliver. This entails a 4.1% increase year on year, largely driven by the 2.8% decline in production. Following a short term decline in response to increased production, prices are projected to rise by an annual average of 2.2% over the course of the coming decade (Figure 55).

While potato prices have increased sharply in recent years, these must be considered in conjunction with input cost dynamics, with the combination driving farm level profitability. Strong input cost increases in 2021 were accompanied by high prices, but in 2022, input cost inflation is expected to outpace potato price increases. More importantly, in the early years of the outlook, when a downward correction is projected for potato prices, input costs may lag - squeezing margins, leaving little room for error and elevating the risks associated with variability in weather conditions. This is true for most field crop producers, but the potato industry's high input cost structure makes it particularly vulnerable. This is further exacerbated by the role that domestic factors play in price volatility, which often results in prices departing from international cycles.

In evaluating the impact of rising input costs on the profitability of potato producers, farm-level financial simulation models can be useful, not only to quantify these potential impacts, but also to understand break-even levels and alternative scenarios. It further assists in demonstrating the impact of specific interventions. These

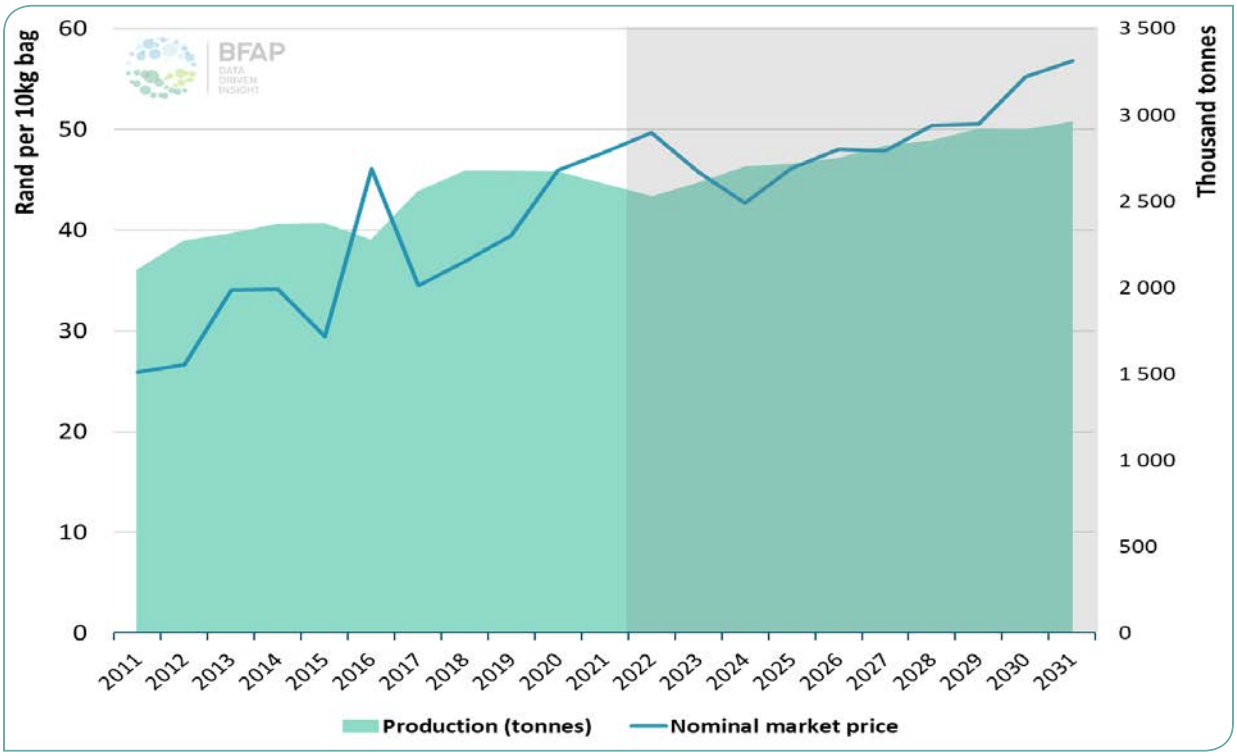


Figure 55: Potato price vs. production: 2011 – 2031

include, for example simulating the short term impact of reducing the fuel price levy or the impact of longer term strategic investments like the role Foskor can play in supplying competitively priced products locally.

For the purpose of this analysis, two prototype potato farms in the Eastern Free State (dryland) and Sandveld (irrigation) regions were used to simulate the cost effects on farm profitability and show potential impacts in a scenario where farmgate prices decline. As an example, a pre-war and pre-COVID era is compared with the current state associated with high input costs. The prototype farms consider a whole-farm approach which not only accounts for direct expenditure, but also overhead costs including cost of finance and debt repayments.

Figure 56 illustrates the additional direct costs per hectare for the Eastern Free State dryland farm as a result of the recent hikes in input costs. The graph on the left compares the increase in direct costs in 2021 to 2023, relative to 2020. The graph on the right illustrates the net farm income index (base = 2021 = 100).

For the prototype farm[8], direct expenditure will increase by R28 000 per hectare compared to 2020, an increase of nearly 40%. In 2020, fertiliser contributed 12% to total direct costs and with the recent hikes, this share will increase to nearly 20% in 2022. Assuming trend yields of roughly 31 tonnes per hectare, the break-even price on direct expenditure for 2022 is above R3 200 per ton (R32.00/10kg bag).

From a net farm income perspective, the index shows the decline in 2022 (from 100 in 2021 to 46 in 2022) as a result of the increases in the cost of inputs. A scenario is also presented if the price for fresh potatoes declines to levels seen prior to the war and COVID (with a range between R32.20/10kg bag and R34.70/10kg bag). In this scenario, overhead costs are also accounted for and the severe impact on farm profitability is clear from the graph.

Figure 57 presents a similar analysis for the Sandveld region to illustrate the effect on irrigation farmers, typically associated with a more intensive input system. The graph shows that direct input costs will increase by nearly R55 000 per hectare in 2022 relative to 2020 (an increase of 34%). Under the current baseline, net farm income will be

[8] It is important to note that the analysis represents the financial simulation results of a prototype farm in the Eastern Free State and Sandveld regions and does not represent an average for these regions. Variations in yield, price, input allocation and costs will differ from farm to farm and should be accounted for.

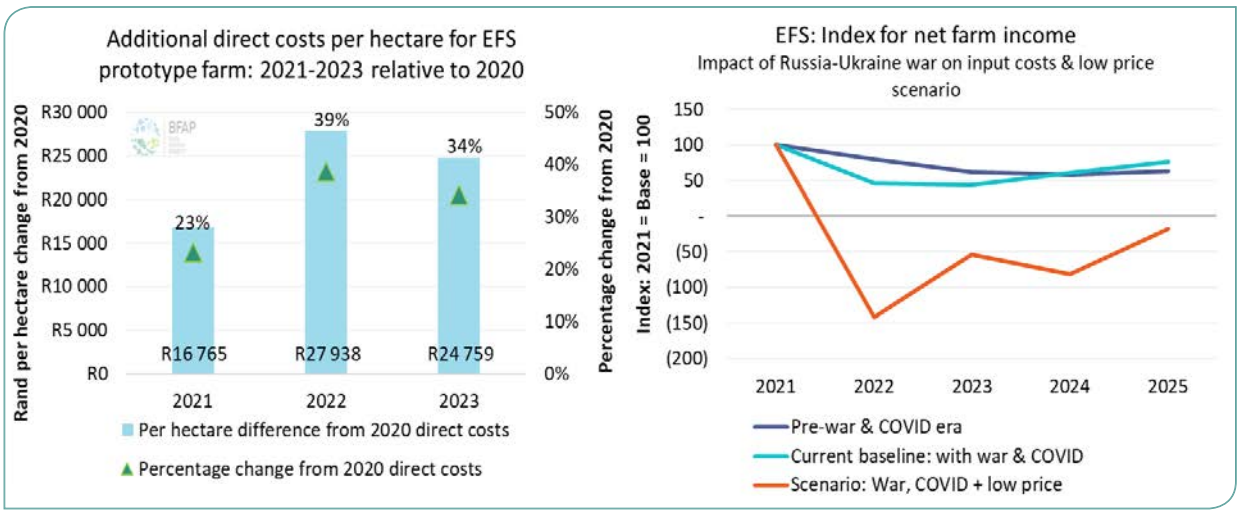


Figure 56: Implication on Eastern Free State direct cost & farm profitability

Source: BFAP & PSA, 2022

under severe pressure, with the index approaching zero. In the event the regional price for fresh potatoes declines to pre-war and COVID levels (on average, R40.62/10kg bag from 2022 to 2025), net farm income will drop significantly and will be negative.

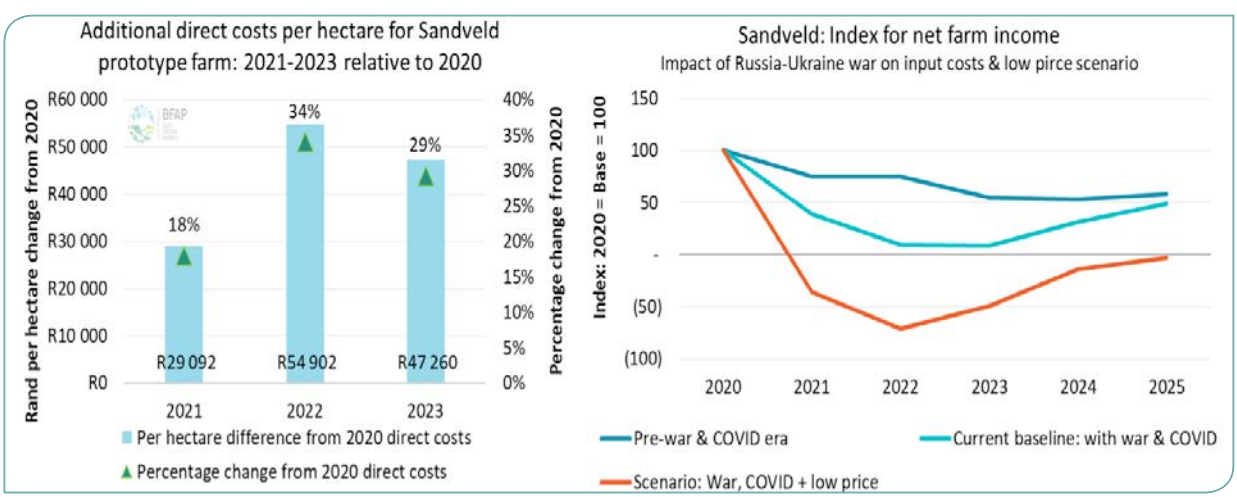


Figure 57: Implication on Sandveld direct cost & farm profitability

Source: BFAP & PSA, 2022

DECIDUOUS FRUIT

INTRODUCTION

Production is increasing across most industries in South Africa's fruit sector. While this should be a positive development, products are currently being shipped into markets at depressed prices, at a time when producers face increased risk from rising input costs and supply chain uncertainties. Perspective on the current situation can still be drawn from the pandemic which started in 2020. Growth in e-commerce and economic stimulus packages across the globe increased the demand for shipped goods, which put pressure on carriers, ports and intermodal transport providers to meet demand (Grynspan, 2022). Combined with constrained port operations, subsequent port congestion and worldwide container shortages left in its wake prolonged lead-times and uncertainty as to the ability to trade. These effects created backlogs in the supply chain and an overall rise in shipping costs that is still felt across the value chain, but particularly strongly by primary producers who, in the fruit industry, carry the most risk.

Chronic local port inefficiencies and unreliable power supply from Eskom compounds the risk of trade for South African producers and exporters alike. In the past year, shipping lines increasingly rerouted their vessels to better utilise them on global trade routes, leaving some containers stranded, resulting in shipments missing their optimal destination market times. Recently this risk has been exacerbated by unforeseen events, such as the hacking of Transnet Port Terminals in 2021, which led to a controversial force majeure affecting container terminals across Durban, Ngqura, Gqeberha and Cape Town, and more recently, the devastating impact of the major floods in Durban. The invasion of Ukraine by Russia has thrown fuel on the fire by sparking a global energy crisis as supply lines are rerouted and the trade flows and supply of agricultural goods and inputs are disrupted.

These trade related challenges, combined with regular market fluctuations, exchange rate volatility and spiralling production costs have led to reduced margins across the sector. Policy reforms such as the African Continental Free Trade Agreement, the Regional Comprehensive Economic Partnership of Asia-Pacific countries, continuous dialog to enable new market access and current negotiations regarding reforms of port operations have the potential to alleviate some of these challenges, thus successful implementation must be a priority. In the current environment, innovative thinking will be required to ensure sustainability.

PRODUCTION

The deciduous fruit industry typically contributes 44% to horticulture's Gross Production Value (GPV). Its ability to

generate foreign exchange is even larger and it remains a major employer within the agricultural sector. GPV for major deciduous fruits has increased from R10.55 billion rand in 2012 (valued in nominal terms) to R24.13 billion on average, for 2019 to 2021. This is the result of increased investment, which translates to higher volumes and value, largely generated by exports. Current estimates suggest that it could reach R53 billion by 2031, in nominal terms (Figure 58).

BLUEBERRIES

Blueberries have been the fastest growing fruit industry in South Africa, driven by strong yield improvements and even greater growth in area planted. Production is estimated at around 27 000 tonnes in 2021, growing the supply base by another 29% just in the past year. Blueberry production in the past decade has increased on average by 32% per annum, with area planted expanding from 350 hectares in 2001, to 400 hectares in 2011, to 2 500 hectares in 2021. Despite rapid growth, the industry is also facing challenges – in 2021 wet weather conditions made harvesting difficult and was detrimental to fruit quality, all while export prices continued to decline. Price pressure is mainly driven by the impact of Peruvian blueberries that have in recent years been flooding into South Africa's traditional export markets, coupled with occasional challenges with maintaining good fruit quality amid long travel times due to port congestion.

Figure 59 presents both the historic and projected area planted and production of blueberries towards 2031. The anticipated impact of strong cost inflation in 2022 and 2023 is driving down farmer returns, which have already been affected by price declines since at least 2016. Consequently, the strong growth observed in the past decade is expected to slow substantially. Production volumes continue to expand to a projected 56 000 tonnes in 2031, as existing young orchards come into production and some yield improvements continue to boost volumes. However, the planted area largely stagnates from 2024 onward, reflecting the need to replace existing orchards that were established 10-12 years prior to 2021 and reluctance to expand investments with farm profitability under pressure. There are robust ongoing discussions within the industry to find solutions to seemingly high value chain costs and how to ensure a consistent and high-quality supply of berries.

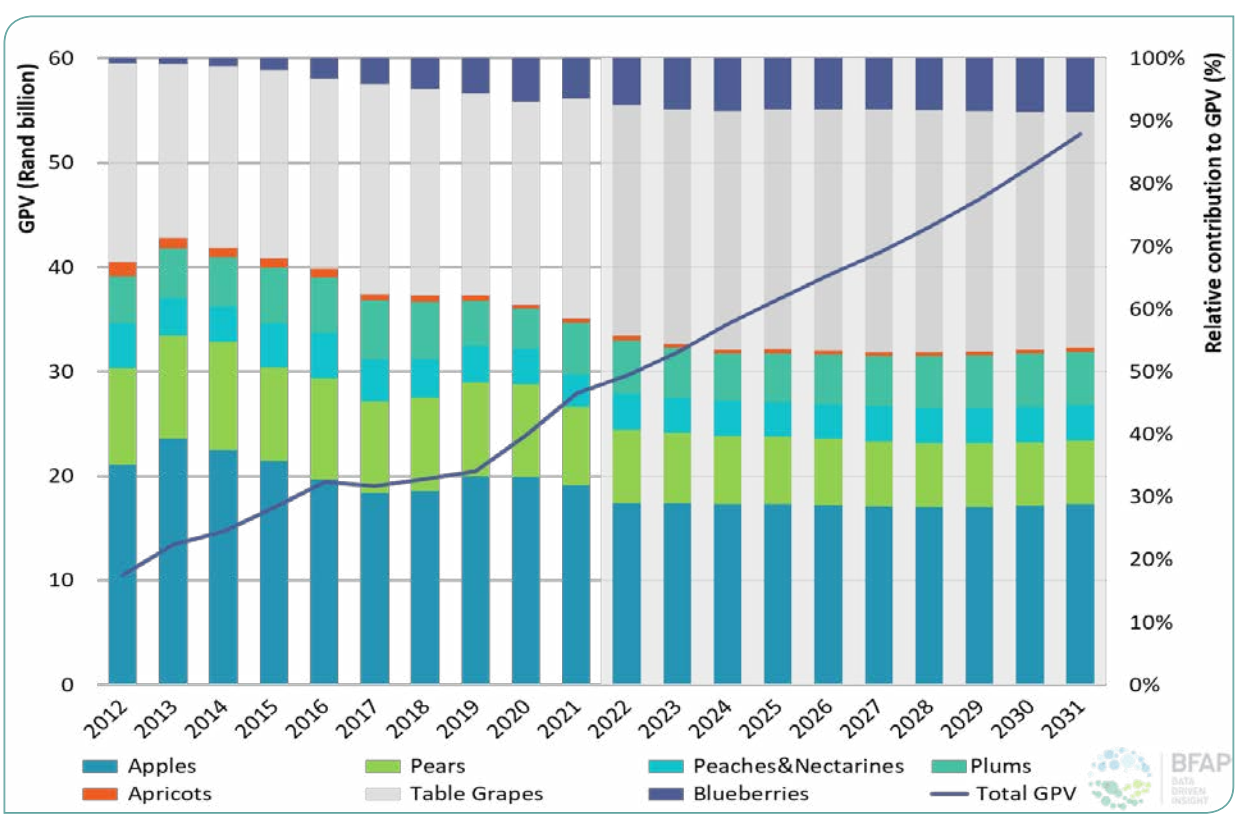


Figure 58: Gross production value for key fruit and nut commodities: 2012-2031

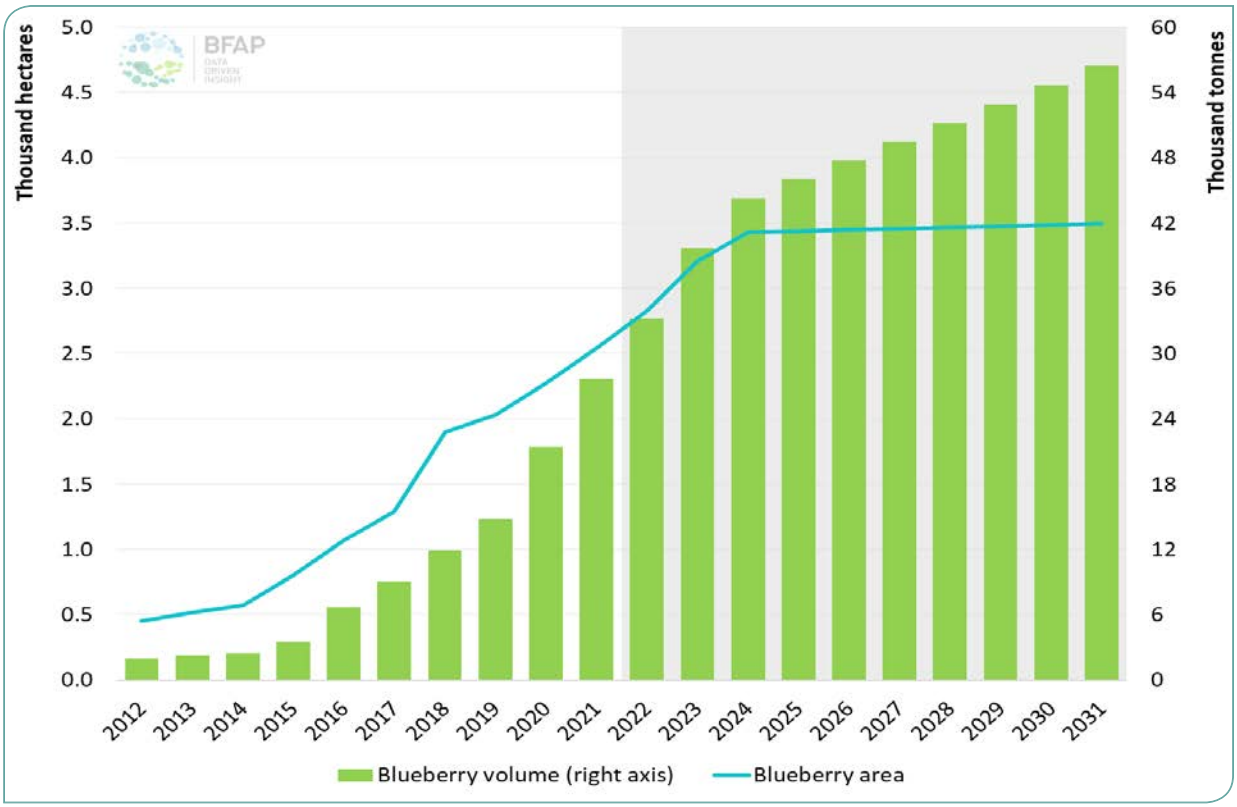


Figure 59: Production volume and area for blueberries: 2012-2031

TABLE GRAPES

Table grape production increased to just over 362 000 tonnes in 2021, and estimates point to a further 8.4% increase in 2022. Although plantings have consolidated, the increase in production has been achieved by higher yields, enabled by improved cultivar genetics, and mostly good weather conditions. However, rain in the summer rainfall areas, particularly in the Orange River and Limpopo/Mpumalanga regions, led to some quality issues. As is true for the other fruit industries as well, waiting periods induced by inefficiencies at the ports had a direct negative impact on the quality of grapes exported. Continued calls for some form of port privatisation or at least joined operations between public and private companies may alleviate some of these challenges in the future. COVID restrictions in China added to shipping delays, while already rising input costs have been exacerbated by the war in Ukraine, adding further strain to farm-level profitability.

During the decade leading up to 2022 the total area planted to table grape vineyards increased 3.3% on average per year, to reach 20 800 hectares in 2022. This relatively steep increase in area was the biggest contributor to production growth, which averaged 4.1% over the past decade. This also includes declines caused by the major droughts of 2015 to 2016 and 2018 to 2020, resulting in underwhelming yields for these periods. The growth in production for the coming decade, however, will arise from a more balanced mix between area and yield growth. Area is projected to expand by an annual average of 0.6%, while yield growth is projected at 0.5% per annum. Combined, this underpins production growth of just over 1% per annum for the next ten years. Yield growth for the outlook is expected to come from improved cultivar genetics and the slower area expansion, which will leave a smaller share of total area at a non-bearing age. This trend has already started to emerge, with area consolidation observed since 2020.

POME FRUIT

Apple and pear orchards received good rain and sufficient chill units the past season, resulting in good fruit set and optimistic quality expectations. Similar conducive

conditions were experienced the previous season (FreshPlaza, 2021).

The total area under apple orchards increased by 13% from 2012 to 2021, to reach 25 000 hectares, while yields improved by 24% over the same period. Area is expected to remain fairly stable in 2022, thus the expected 0.9% increase in production volumes to 1.17 million tonnes is largely reflective of an improved yield. Having expanded by 43% over the past decade, production growth is expected to slow, rising by 5.7% to reach 1.24 million tonnes by 2031. This emanates from yield gains of 1.5% per annum, despite a decrease in total hectares of about 7.6%. From a climate perspective, there are productivity concerns that extend beyond the outlook period and relate to the recurring loss of winter chill units closer to 2050, in the winter rainfall areas of the Western Cape and in particular Ceres (Bonthuys, 2022; Tharaga, Steyn, & Coetzer, 2021; Theron, 2022). These concerns, combined with rising input costs, are the main factors resulting in a reluctance to re-establish orchards situated in more marginal areas, with focus instead on increasing production volumes for orchards with higher potential. The relatively stable share of bearing area in total area, both historically and over the outlook period, at around 90% reflects the industry's relative maturity.

The area under pear orchards increased by 9% from 2012 to 2021, reaching 12 700 hectares. The total area is expected to contract slightly in 2022 by about 3%. The bearing area in 2012 was 92% of total area and estimates suggest that this will rise to 94% in 2022 and 96% in 2031, pointing to a maturing orchard structure, with some replacement still occurring. Historically, yields have grown on average by around 1% per annum. Subsequently, total production has increased by 27% between 2012 and 2021. With some yield gains expected, production is expected to decline by 2% year on year in 2022, despite the larger contraction in area, to deliver 453 000 tonnes. Towards 2031, production is expected to increase by 5.1%, to reach 476 000 tonnes, reflecting a slight contraction in the total area of about 2% and a total yield gain of 6%.

STONE FRUIT

Flowering on plums was good in 2021, but a cold spring delayed the start of the harvest for peaches and

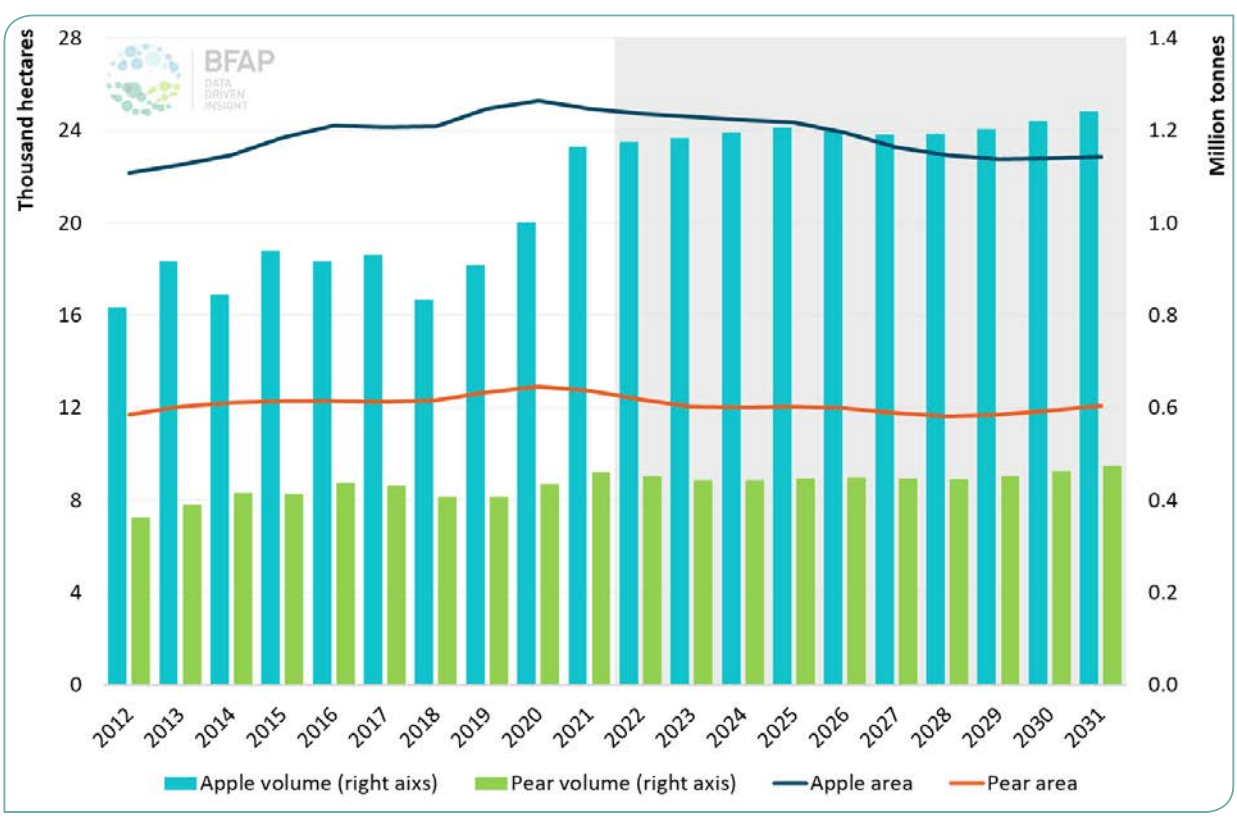


Figure 60: Production volume and area for pome fruit: 2012-2031

nectarines, resulting in smaller fruit size (Janse, 2021). Economic returns to growers across the different stone fruit commodities stretched from marginal and negative, on average, for plums, to good performances from nectarines, with varying but relatively small positive returns for the other commodities. Profitability of plum production was already under pressure and early indications are that the past season was no better. Late rains in the Western Cape negatively affected early season plums, which would typically realise relatively higher prices than later season plums.

Apricot hectares have been declining for some time and contracted by 32.3% from 2012 to 2021, with some establishments under contract for canning. The biggest portion of the planted area is also nearing the end of its theoretical production lifecycle. Uprooting rates have slowed in recent years and the persistent decline in hectares is expected to slow over the outlook period and area is expected to stabilise at around 2 000 hectares, from 2 187 in 2021. A contributing factor to the decline has been yield reductions over time, at an average of 4% per annum over the past decade. Yields did bounce back strongly to exceptional levels in 2021 and are expected to decline closer to trend levels in 2022. Towards 2031, yields are expected to recover somewhat, returning to a modest upward trend due to the effect of new, higher yielding cultivars. The combination of area decline and yield regression resulted in production contracting by an annual average of 9% over the past decade, and a further reduction of 12.7% is expected in 2022, to deliver 34 500 tonnes. Production is expected to stabilise, trending only marginally downwards over the outlook to reach 33 400 tonnes by 2031.

Peaches (cling peaches and dessert peaches as a collective) have been uprooted at a rate of 3.7% per year on average between 2012 and 2021. A further 3.7% is expected to be uprooted in 2022, to reach 5 300 hectares. These trends reflect unsustainable returns on farm level for peaches, emanating from decreased demand. Nectarine orchards' total area, on the other hand, has remained largely stable over the same period, reflecting a maturing industry, with fewer experimental cultivars planted and a greater focus on proven cultivars for specific areas. Total nectarine area is expected to rise by 2% in 2022, to reach 2 250 hectares. Nectarines are attracting growing interest, with profitability consistently better than peaches. As a result,

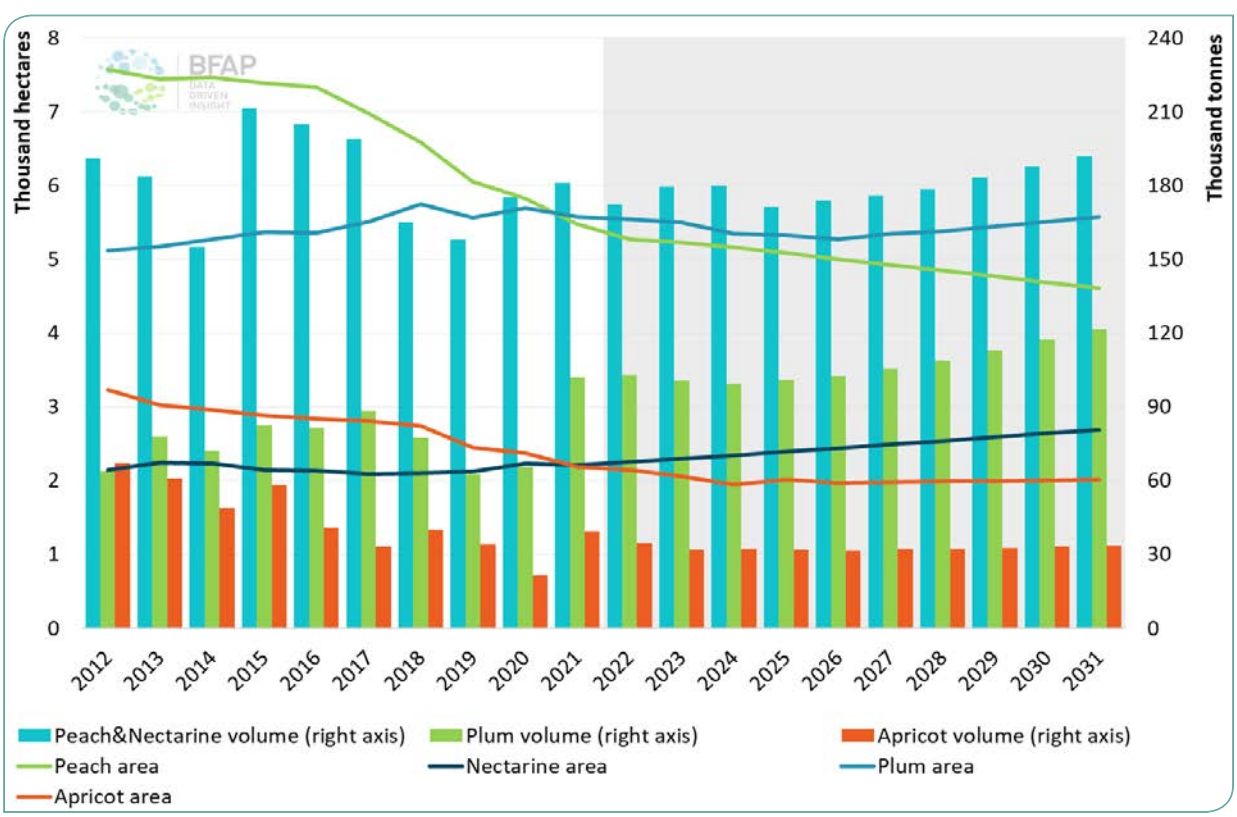


Figure 61: Production volume and area for stone fruit: 2012-2031

peach hectares are expected to contract further by 12.6% over the outlook period, to reach 4 608 hectares in 2031. Conversely, the nectarine area is expected to grow by 20%, accumulating 2 692 hectares by 2031. Despite the decline in peach area, pockets of opportunity exist for fresh exports. On average, yields for peaches and nectarines as a collective have increased yearly by 1.7% over the past decade. This is remarkable growth considering the switch from peaches to nectarines, which are often considered to be lower yielding. Although yields are expected to decline marginally in 2022, an average annual gain of less than 1% is projected over the ten-year outlook period, reflecting the rising share of nectarines in total area. Subsequently, production is expected to reach 192 000 tonnes by 2031 – an 11% increase relative to 2022.

The total area under plum trees has been growing at around 1% per year between 2012 and 2021, and is expected to remain fairly stable in 2022. Prune production in South Africa is not gaining significant traction and area under plums suitable for drying is expected to expand only marginally by less than 1% by 2031. Having declined consistently, a record production year provided yield growth of 47% from 2020 to 2021, surprising stakeholders across the value chain. Over the outlook period leading up to 2031, yields are expected to improve by 16.6%. Combined with a fairly stable area projection, this results in 18% growth in production by 2031 from 2022 levels. The sharp increase in yields of 2021 was impressive but can really be seen as a correction, following a prolonged period of recurring droughts in the decade before, which did not enable true potential to be reached. Therefore, despite 2021 being a record year, production could remain at similar levels in 2022 and under the baseline assumption of stable weather, also beyond. Fresh plum export prices are expected to remain relatively flat over the outlook period, thus not keeping up with inflation and declining in real terms. These price formations imply continued pressure on margins, with many producers already battling negative returns in 2022. Improvements in both productivity and fruit quality will therefore be crucial to ensure the sustainability of the current hectare base.

The share of non-bearing trees in total area has been declining for all stone fruit, except apricots and this is expected to continue over the outlook. In the case of plums and nectarines, this represents maturation of recent establishments, whereas for peaches and apricots it speaks to a lack of further expansion.

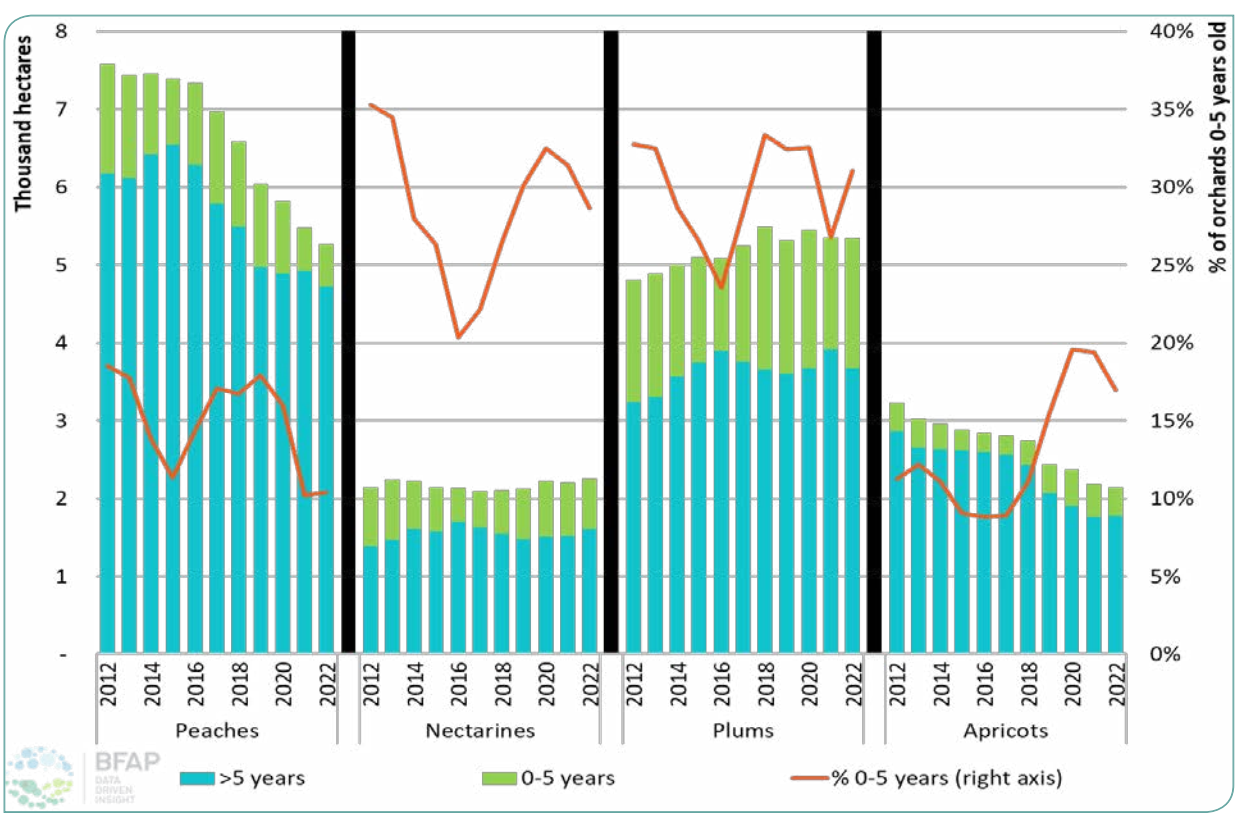


Figure 62: Age distribution of stone fruit area
Source: HORTGRO (2021)

The total area under cherry production has increased on average by 16% annually, from 166 hectares in 2013 to 549 hectares in 2021. The peak planting tempo for this period was between 2017 and 2018, with a 30% year-on-year increase. In 2021, 56% of cherry orchards were situated in the Ceres area, with each of the North West, Free State and Western Cape Worcester sub-region holding 10-13% of the production area. In 2016, 14% of all orchards were two years old or younger. By 2021, this figure has risen to 18%, and 85% of all orchards were still younger than 16 years, indicative of an industry on the expansion path.

Average yields on bearing hectares have increased over the period of 2013 to 2021. However, due to the alternate bearing nature of cherries and the rapid increase in area over this period, total production has been quite volatile. Nevertheless, the combination of significant expansion of cherry orchards and growth in productivity has brought production up to 900 tonnes in 2021.

BOX 5: OVERVIEW OF THE CANNING AND PRESERVING INDUSTRY

The fruit-canning industry in South Africa has its roots in the late nineteenth century Paarl and Stellenbosch in the Western Cape, with the opening of the first jam factories in South Africa (SA History, 2022). Since then the industry has grown to include a myriad of products derived from fruit commodities. Figure 63 shows the value and volume of all processed fruit products (including juice) exported and major fruits sold for processing. Roughly 85% of all canned fruit is destined for the export market (SAFVCA, 2022). In 2021, the export value of processed products derived from fruit was almost 4 times larger than the value received by producers of major processing fruit commodities, as more value is added to the product further along the value chain. The value of processed fruit products stood at around R8 billion in 2021.

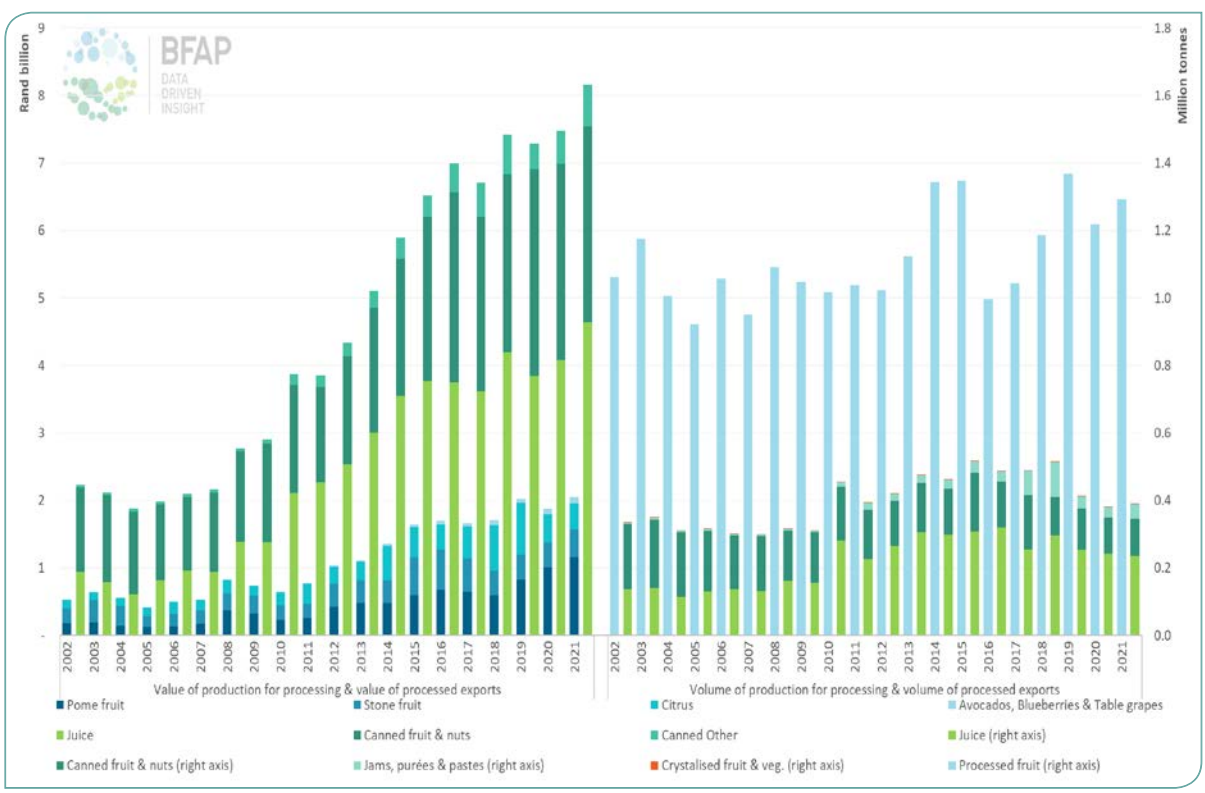


Figure 63: Export value and volume of processed fruit products vs. GPV and volume of processing fruit
Source: BFAP (2022), compiled from Trademap (2022)

South Africa exported R648 million of juice to Spain in 2021, the largest export destination for juice, followed by R530 million to Japan and R488 million to Botswana. The UK was the major destination of canned fruit & nuts, at R405 million, followed by R290 million to the USA and R255 million to the Netherlands. Canned peaches & nectarines represented

BOX 5: OVERVIEW OF THE CANNING AND PRESERVING INDUSTRY (CONTINUED)

R702 million of these exports and canned pears R427 million. Most canned peaches and nectarines were sold to China, at R135 million, followed by R86 million to the USA. The biggest markets for canned pears were the USA with R141 million, followed by the UK with R85 million.

Real prices received by fruit processors have historically been largely flat, with nominal increases helped by a weakening rand and value addition through processing and packaging. The rise in input costs such as fuel and electricity is of major concern for this industry. Low prices received at the farm gate for fruit commodities reflect the limited ability of producers to add value to processing grade fruit, other than sorting and transporting the fruit to processing facilities. Some cultivars are grown specifically for fruit processing, as not all cultivars that are suitable for the fresh market are suitable for processing. Table 8 presents the percentage of fruit, as a 3-year average of total production (2019 to 2021), that enters the processing market for various fruit types.

Table 8: Primary production offset to processing

Major fruit commodities	Processing 3-year average (% uptake)
Apricots	67%
Peaches & Nectarines	61%
Pears	36%
Apples	34%
Grapefruit	30%
Lemons and limes	26%
Oranges	21%
Blueberries	16%
Soft citrus	14%
Avocado	10%
Plums	3%
Table grapes	1%

TRADE

Horticulture products played a major role in generating foreign exchange earnings through exports for the period 2019 to 2021 (Figure 64). This is considered a major strength of the industry, but conversely also makes it reliant on global markets. It is strongly affected by exchange rate volatility, tariffs and non-tariff measures, and the efficiency and competitiveness of port, air and road logistics. Recent events such as COVID-19, the invasion of Ukraine by Russia, fluctuations in the exchange rate, increased supply from foreign competitors and internal inefficiencies at Transnet and Eskom have highlighted the need, expressed by producers, exporters, processors and input suppliers alike, to mitigate risk and unlock value through access to new markets (such as that of the Far East). Furthermore, since most of South Africa's fruits are supplied counter-seasonally to the Northern Hemisphere, the prevailing conditions of economic stagnation combined with high inflation in these markets is a concern that warrants monitoring.

BLUEBERRIES

The South African blueberry industry has largely been built with the United Kingdom and the Netherlands fresh berry markets in mind, although there is growing demand in some emerging markets. In 2019 the Netherlands, the gateway into Europe, became South Africa's biggest export market in both value and volume terms, overtaking the United Kingdom. Around 72% of the total harvest is dedicated to exports and this is expected to increase over the outlook period. Around 12% of total production is sold in South Africa's fresh market and the remaining 16% is sold for processing, mainly in the form of individually

quick-frozen products. There is great uncertainty around the export price trajectory, especially since it is unclear to what extent consumers in the developed economies will respond to the current high inflation levels and whether this will impact blueberry consumption. On the one hand, one would expect higher income consumers in developed countries to be less sensitive, but blueberries are very much a niche product, which may be affected more than other fresh fruits.

Figure 65 shows the export performance of blueberries which, in line with production growth, has increased by around 37% per annum since 2011. Export growth is expected to slow over the outlook and although export volumes continue to grow, export prices over the baseline are expected to be stagnant and from a lower base compared to the previous decade. The export performance and the projection for the future should be read in context of the anticipated strong growth of Peru's export volumes in most of South Africa's trading partners, which will likely result in sustained price pressure. Total exports are expected to reach around 42 000 tonnes by 2031, valued at a real (2020) CIF level of R3.1 billion.

TABLE GRAPES

For the table grape industry, port inefficiency concerns relate primarily to the Port of Cape Town, as it is the nearest point of exit for the bulk of the industry's produce. However, some exporters in the early season Orange River region have had to make use of Durban, especially when produce is bound for the Middle East and Asia (Fruitnet, 2022). Harvest conditions were mixed in 2022 – conditions in most regions were good, but the Orange River region and northern provinces had challenging weather conditions, and the Olifants River had to deal with a heat wave.

In 2022, 86.2% of all table grapes produced in South Africa were designated for the export market, with 6.1% marketed locally and the complement either processed, dried or pressed for wine. Exports have increased over the past decade, and are expected to continue on an upward trajectory over the outlook period, in line with growing production. The market share of exports is expected to remain fairly stable, as it represents the highest value market segment, but there will always be a share of production that does not meet export market standards. Of the 75.3 million

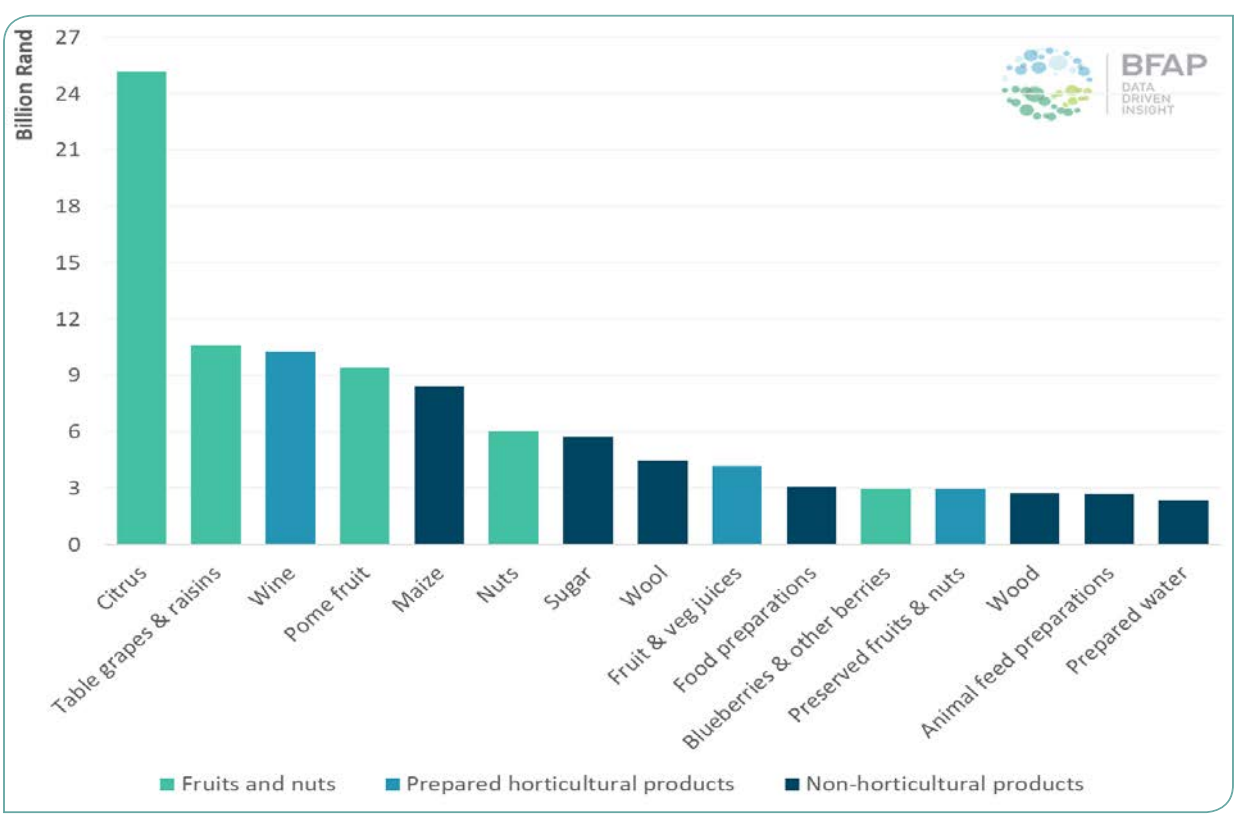


Figure 64: SA's major agricultural and food exporting industries: 2019-2021

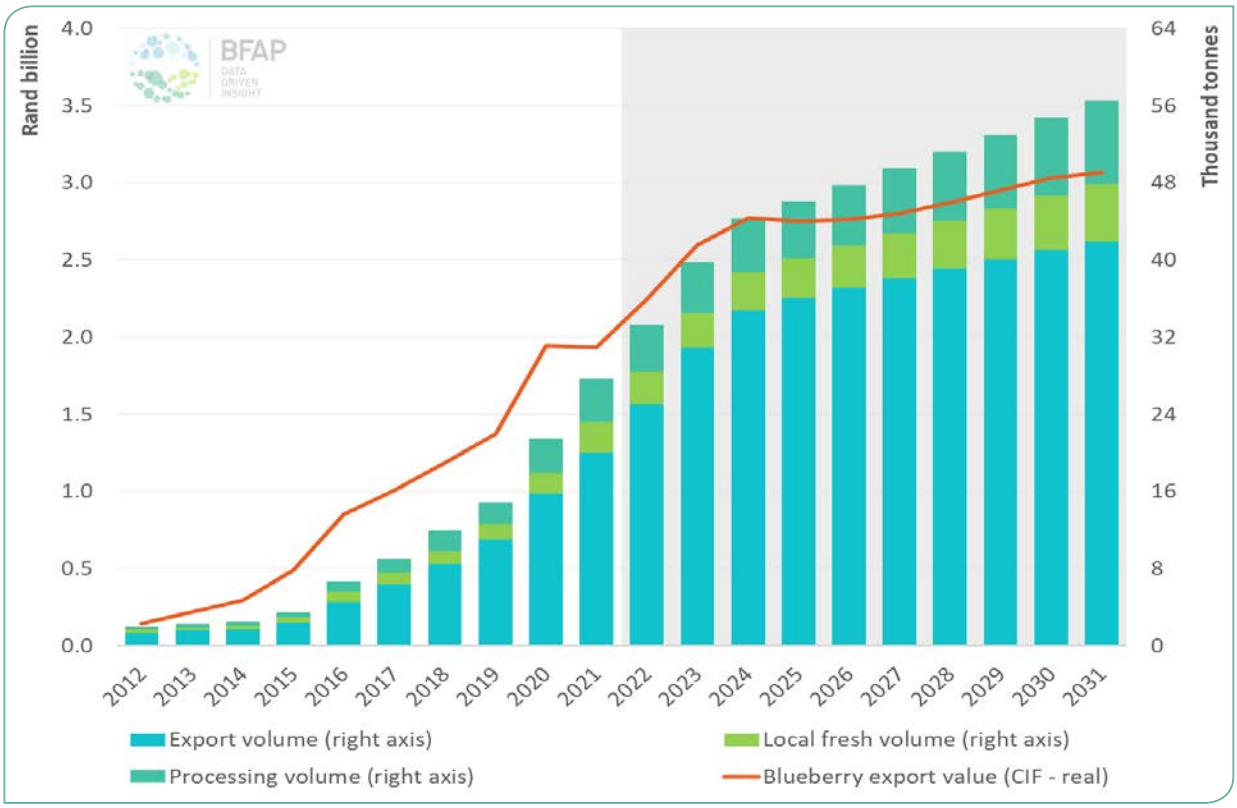


Figure 65: Export Value and Volumes of Production for blueberries: 2012-2031

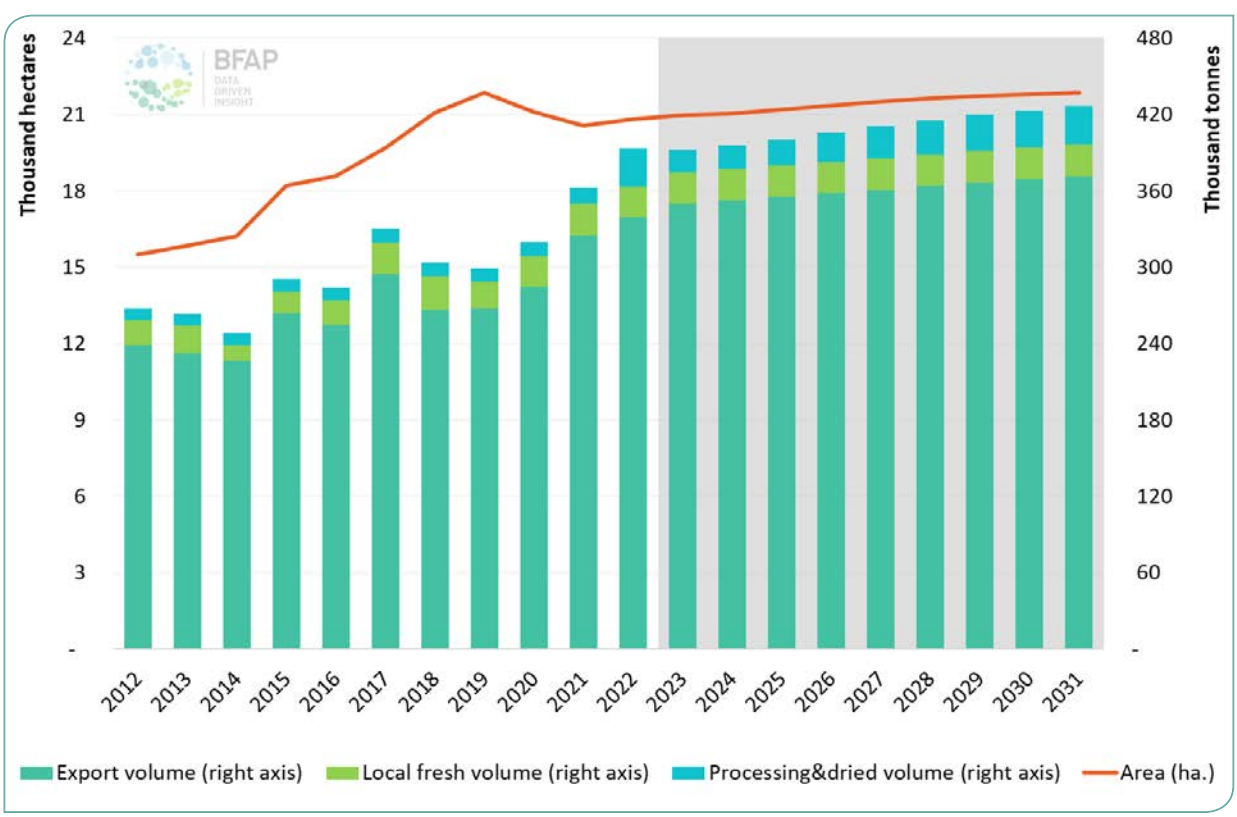


Figure 66: Production area and market distribution for table grapes: 2012-2031

cartons shipped in 2022, 75% were destined for the EU and UK combined (with most sent to the EU). Therein lies the key opportunity and necessity going forward: to access additional markets, both as a risk mitigation strategy and to improve export price realisation. Growth in real and nominal export prices is expected for the outlook, with the underlying assumption of a depreciating rand and an increased focus on quality over quantity.

POME FRUIT

Pome fruit exports faced the same port and logistical challenges as other deciduous fruits in 2022. It is, however, an industry which is particularly affected by Russia's invasion of Ukraine as almost 8% of South African apples and 18% of pear exports by volume were bound for Russia in 2021. Even though pome fruit has the ability to lengthen the export window due to controlled atmosphere storage, it is still dependent on optimal market conditions, fruit quality, and storage costs, which ultimately determine the export window.

In 2021, 48% of apples produced in South Africa were destined for the export market, 17% for the domestic fresh market and 35% for processing, of which a minuscule share was dried. The concomitant numbers for pears were 50% for exports, 11% for to the domestic fresh market, 38% processed, and 1% dried. Nominal export price gains are expected for the outlook period for both apples and pears, however not as steep as those observed between 2012 and 2021 and mostly at rates close to general inflation. Particularly in the EU, stock volumes have increased relative to historic norms, which dampens price growth. Therefore, cost-cutting at farm level or value-adding through improved market share and branding of products remain vital to ensure sustainable growth going forward. Pears have now joined apples in gaining market access to China, which provides a solid basis for expanding market share even further (Jansen, 2021).

STONE FRUIT

Delayed port operations were by far the biggest stumbling block for the stone fruit industry the past season. Port inefficiencies not only caused delays in loading that impact on fruit quality, but also lead to fewer ships visiting that port, exacerbating delays to the detriment to fruit quality and closing key market price windows. Exporters are also

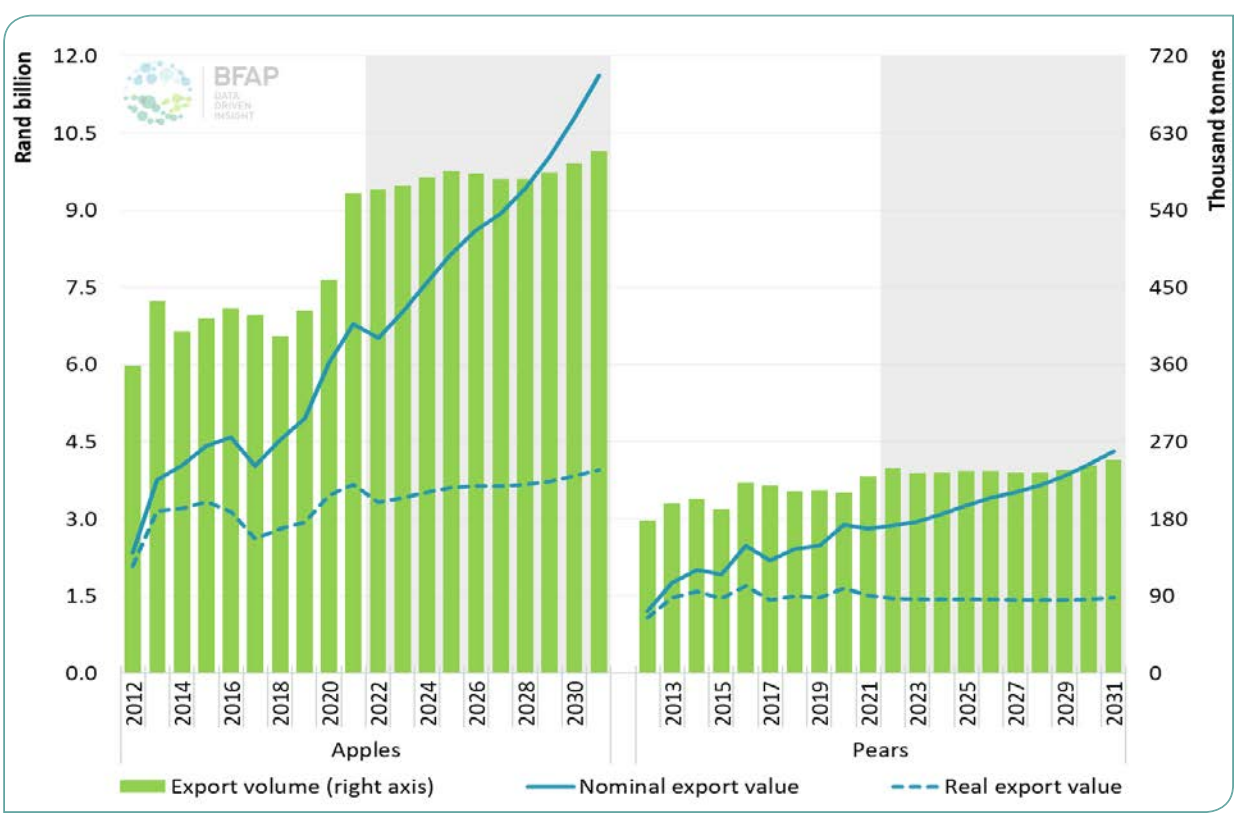


Figure 67: Export value and volume for pome fruit: 2012-2031

continuously having to resort to more costly shipping alternatives.

In 2021, 72% of apricot production went to the processing market, 16% was dried, 8% exported fresh and 4% was sold on the local fresh market. These shares align with cultivar choices. For peaches and nectarines combined, 60% were processed, 7% dried, 12% designated for fresh exports and 21% sold on the local fresh market. In the case of plums, only 1% was processed, 1% dried (prunes), 78% designated for the fresh export market and 20% sold on the local fresh produce market. Nominal fresh export prices for plums increased by 82% between 2012 and 2021, with much of this gain attributed to the weakening of the Rand.

The projection for the outlook period is largely flat (Figure 68), increasing by a mere 6.6% to 2031, with a slight inflection in price declines only after 2026. This is largely a result of strong additional volumes and leaves a very small margin for errors from port delays or above normal input price increases. It also suggests that expanded market access should be a priority, in order to mitigate the effect of additional volume on prices.

In 2021, an estimated 41% of cherries produced were delivered to the local market, 49% exported and an estimated 9% went to the processing industry. In 2013, a mere 2% was exported, with 92% delivered to the local fresh market. Export prices have also increased substantially from 2013 to 2021, at an annual average of 11.7%, thus outpacing the weakening Rand. Local and processing prices have also increased considerably, with 8.3% and 12.3% gains per annum on average. South Africa's main export destination for cherries is the UK, followed by the Middle East, Europe, Africa, Asia and the Indian Ocean Islands (FreshPlaza, 2021). The biggest importer of cherries on the global marketspace is China, a market that South African cherries are not yet able to access.

DOMESTIC USE

Growth in the local fresh market remains limited for the deciduous fruit sector. Demand for apricots remains constrained, while some growth is expected for peaches and nectarines (8.8%), mainly driven by nectarines; pears (5%), as local prices become more attractive; plums

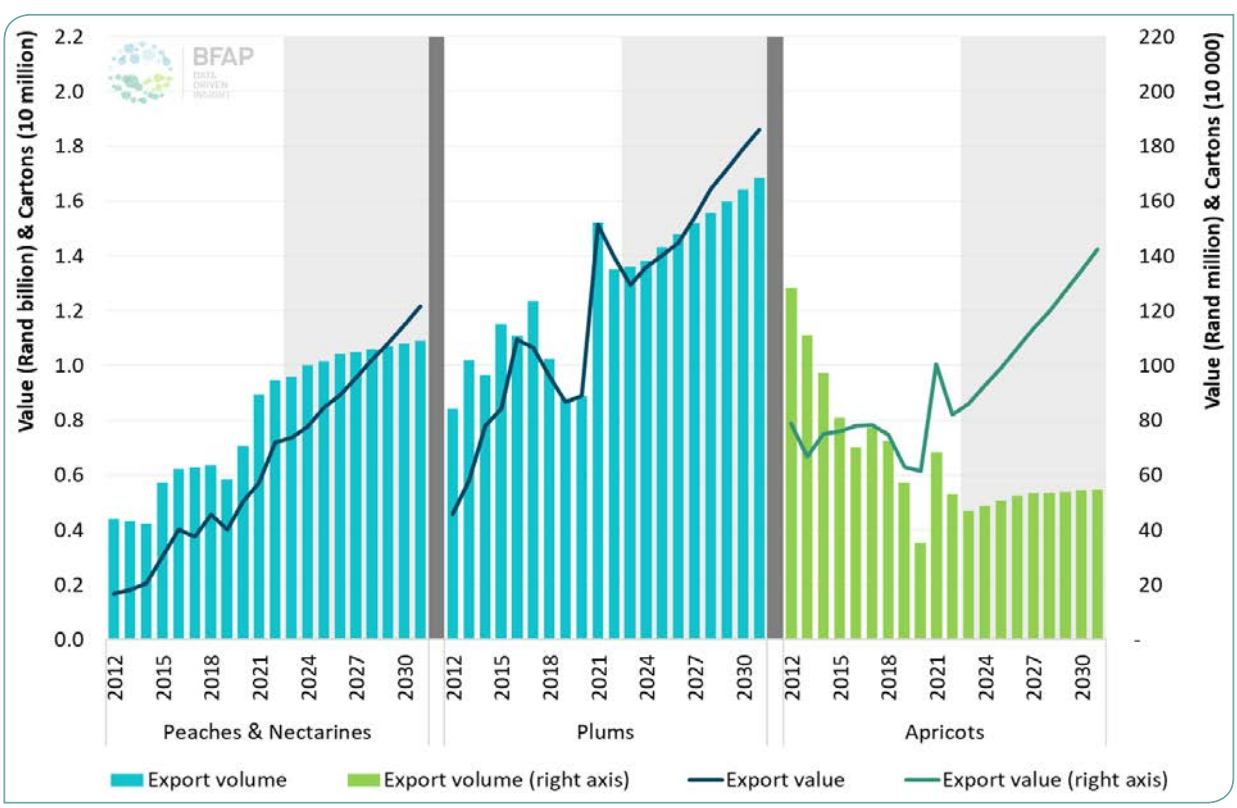


Figure 68: Export value and volume for stone fruit: 2012-2031

(16.8%) as the cost of exporting negates any premiums; and for table grapes (5.1%) as contracts with supermarkets still remain an option to producers that are geographically well situated. The local fresh market volume outlook for apples is largely sideways, whilst local prices increase, reflecting the maturity of the market. Real and nominal growth in table grape prices are expected over the outlook period, albeit more subdued relative to the past decade.

Produce distributed into the local market faces the reality of slow economic growth, and hence a broad orientation towards high volume, and competition from lower cost goods such as the staples, flour and oil. Recent events in the global arena may add pressure to the established local consumption patterns for fresh fruit in the short run, especially in the lower- to middle-income households, as consumers deal with accelerating food price inflation. In the long run, the economies of scale of staple foods will still better suit local purchasing power. The Johannesburg Fresh Produce Market and others also struggles with issues of infrastructure neglect and there are concerns about fresh produce markets' ability to provide a competitive market for produce suppliers. For producers with established supermarket programmes, however, supplying domestically will remain a key outlet.

Between 2012 and 2021, apricot processing prices increased by 62.6% in nominal terms, and this growing trend is expected to continue over the outlook period. However, much of the price increases are expected to occur in the early years of the projection period. The nominal processing prices of peaches and nectarines have increased by 50% over the past decade, a trend which is expected to persist into the future. Nominal prices for processed apples and pears are expected to increase at a steeper rate over the outlook period, relative to the decade before. Volumes for processed apples, pears and peaches, and nectarines will see slight increases over the outlook period, with upticks of 5%, 7% and 11% respectively. The fruit processing industry plays a large role in adding value to the agricultural sector's footprint. However, for the most part, this value is concentrated further down the value chain, with tight margins at the farm gate, given relatively low output prices and increased costs of production.

Unlike many of the other fruits, the local blueberry market has been one of the standout performers in terms of market growth in the past decade. Fresh consumption is somewhat different in that blueberries started from a very low base and only became widely available in South Africa's retail stores for long periods relatively recently. The demand growth has been driven by the high-end consumer base in the top LSM group, which are less sensitive to income and price changes. This has meant that blueberry consumption in South Africa has grown from an estimated use of 314 tonnes in 2012 to around 3 200 tonnes in 2021. Demand has been firm, since, despite the strong increase in volumes, local prices have not experienced the same rates of decline over the last couple of years as export prices. The local market continues to be an important segment for blueberries and one that the industry would like to continue to grow. Furthermore, in the past five years there has also been significant growth in blueberry production in Zimbabwe, Zambia, and more recently Namibia. Much of this production reaches the South African or export markets earlier than the local harvest, implying wider availability of the product and more competition for South African growers. Despite this, projections suggest that local market prices will remain robust as the local consumption continues to grow over the next ten years.

The processing market for blueberries has also grown significantly, from 250 tonnes in 2012 to around 4 500 tonnes in 2021. As expected, processing prices are a fraction of the fresh product, but this remains a critical market segment with the potential to expand in both the domestic and export markets.

BOX 6: FRUIT INTAKE IN A CONSTRAINED ECONOMIC ENVIRONMENT

In South Africa, fruit expenditure is dominated by affluent households (Figure 69), who consume 50% or more of all the fruit types, excepting for oranges and apples.

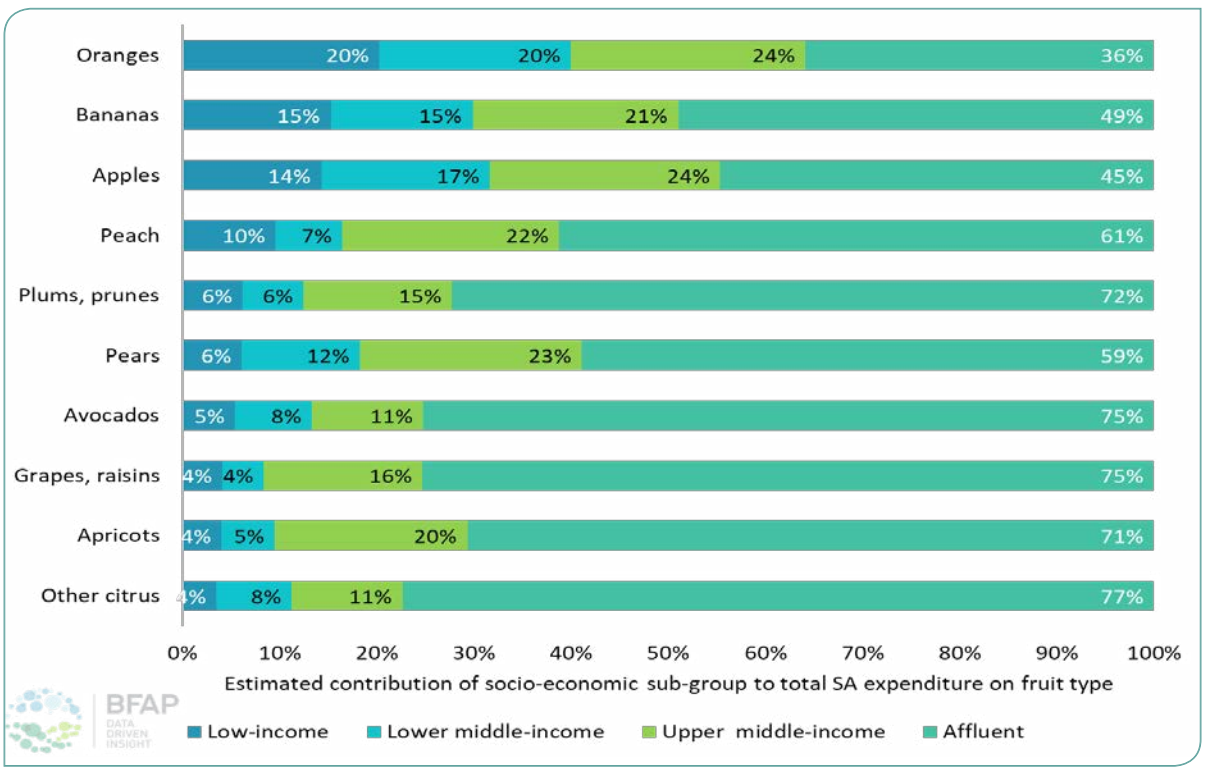


Figure 69: Fruit consumer market shares in South Africa from a socio-economically disaggregated perspective
Source: BFAP estimates based on Stats SA Living Conditions Survey 2014/2015 household-level expenditure data

As evident from Table 9, fruit expenditure (and thus intake quantities), as well as dietary diversity from the fruit group, increases with socio-economic status, being significantly higher for affluent households than for lower socio-economic groups.

Table 9: Dominant fruit options among main socio-economic groups in South Africa

	Low-income	Lower middle-income	Upper middle-income	Affluent
Estimated contribution to total fruit expenditure in SA	11%	12%	19%	58%
Fruit options accounting for approximately 80% of total fruit expenditure by socio-economic sub-group	Apple Banana Orange	Apple Banana Orange Avo	Apple Banana Orange Grape/raisin Pear Avo Peach	Apple Banana Avo Grape/raisin Orange Peach Pear Other citrus
Source: BFAP estimations based on Stats SA Living Conditions Survey 2014/2015 household-level expenditure data				

CONCLUDING REMARKS

Although production was good for the most part this past year, significant challenges in the value chain have prevented good returns back to farm. Significant uncertainty remains, and the respective industries are increasingly being drawn into solving off-farm problems, which ultimately reduces returns. A rethinking of production models and value chains is required, as increasing costs and lower output prices put strain on the competitiveness and ultimately on farmers' ability to survive. Short run shocks (such as shipping cost increases) could cripple firms' ability to remain in business and propagate unfavourable circumstances for the medium and long run. In the long run, however, produce supply will adjust and become more profitable once again. The issue at hand for the fruit industry, in particular, is that investments require long-term contingency thinking, due to the long lifespan of fruit orchards. If the current environment of high costs and shipping challenges persists longer than expected, area reductions could be sharper than under baseline projections.

CITRUS AND SUBTROPICAL FRUIT

INTRODUCTION

South African citrus had another record season in 2021 – it's fourth in a row. After the COVID-19 related spike in 2020, prices stabilised somewhat in 2021, whilst costs throughout the value chain increased at unprecedented rates. Somewhat in contrast, South Africa's avocado season was once again plagued by adverse weather conditions, resulting in lower-than-expected volumes. Despite growing supply worldwide, demand continues to rise faster, supporting price gains that provide some buffer for producers against the rising costs in the value chain. As far as tree nuts are concerned, South Africa's major exports consist of macadamias and pecans. Investment in these two industries has expanded rapidly over the previous decade, with volume growth expected to continue over the medium to long term as these trees enter bearing age. Macadamia production volumes faltered somewhat in 2020, before recovering partially in 2021, but a full recovery is expected in 2022. Pecan production took the plunge one year later – in 2021 – but should bounce back in 2022. Both dips were attributed to variable weather patterns that affected yields, as nuts are planted in different geographic and climatic regions across the country.

Positive business sentiments had driven the expansion in long term crops over many years, but as increasing volumes from young trees enter production producers are faced with a combination of unprecedented challenges, largely beyond their control. This deteriorating environment is causing major concerns about the sustainability of investments made over the past decade. Recent contributing events include:

- Hacking of the Transnet system in July 2021, bringing operations at ports to a near standstill;
- General domestic port inefficiencies – Transnet reports that the Cape Town container terminal lost 96 days in operations due to weather conditions and slow turnover in its most recent financial year;
- Skyrocketing shipping costs – unprecedented port congestion worldwide, record low levels of ship schedule reliability and container shortages;
- Input supply uncertainty – Russia's invasion of Ukraine; and most recently, the April 2022 floods in Durban – affecting access routes to the port and stalling port operations

PRODUCTION

Significant expansion in area has been observed in the citrus and nut industries. In the case of avocados, nursery data points to significant growth in the industry, but it appears that replacement and higher density plantings have resulted in smaller area expansion than anticipated. Expansion and replanting are indicative of positive sentiment, especially in long term crops, and a part, but not all, of the past decade's replacement and expansion can already be observed in the harvested volumes.

Figure 70 shows the most important production areas for citrus, subtropical fruit, and nuts. Oranges, soft citrus, lemons, grapefruit, avocados, macadamias and pecans are plotted, together with an indication of the ports – Cape Town, Ngqura, Durban and Maputo. As all of these commodities are produced with a strong focus on foreign markets, routes to and productivity at these ports are critical factors in generating value and foreign revenue.

The total area planted to citrus, avocados, macadamias and pecans increased by more than 100% in 10 years, from less than 110 000 hectares to close to 220 000 hectares in 2021. As a result, volumes grew, but given the lag required for trees to reach full bearing status, additional growth in volumes can be expected. Production volume grew by 45% in 10 years, from 2.27 million tonnes in 2012 to 3.29 million tonnes in 2021 even with a large non-bearing component. The financial consequences are captured in the growth in the gross production value (GPV), which grew exponentially (+260%, from less than R10 billion in 2012 to more than R34 billion in 2021) as a result of lucrative prices and these additional volumes.

CITRUS PRODUCTION

Strong citrus demand during the early parts of the past decade supported price growth in excess of general

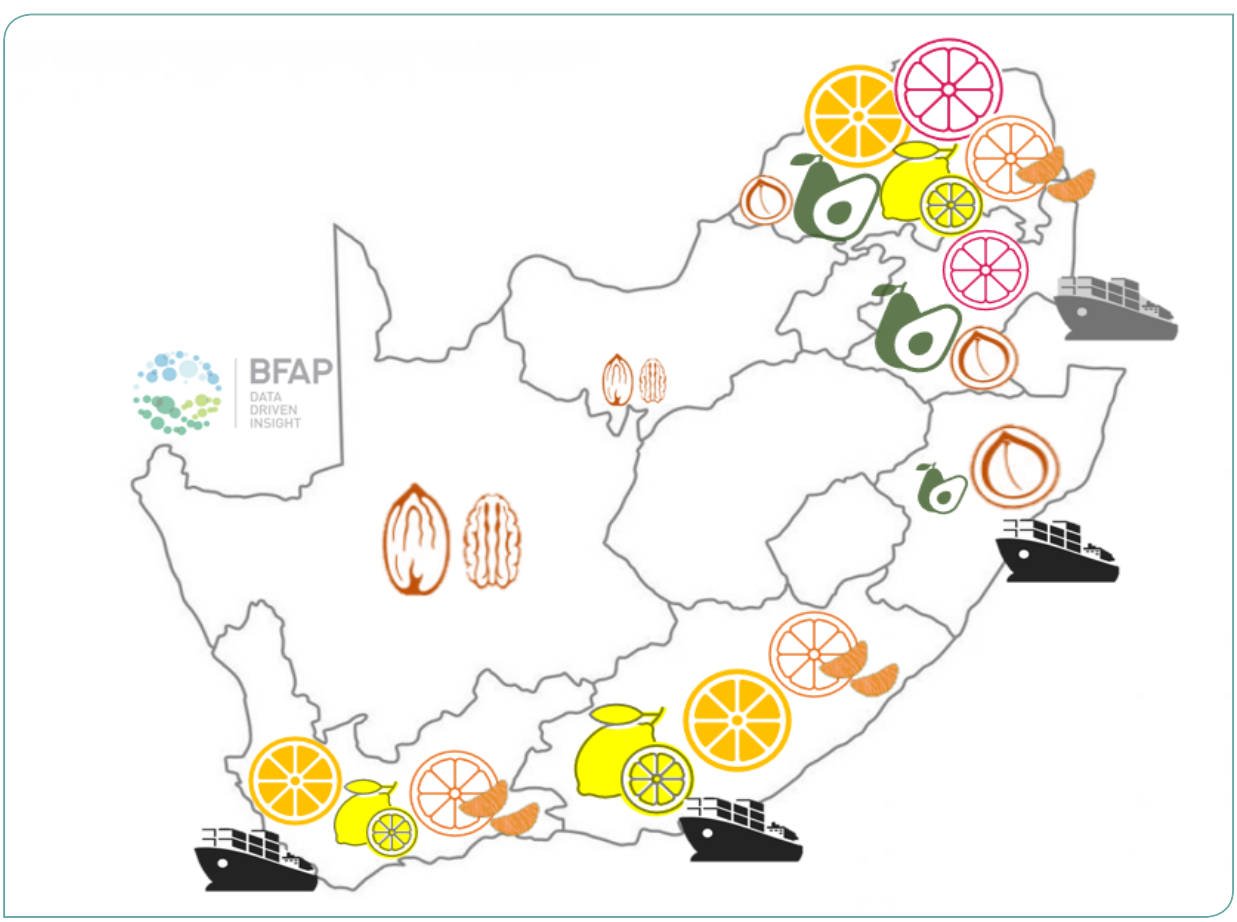


Figure 70: High-level schematic of ports and major planting areas for citrus, avocados and nuts

inflation, thus initiating area expansion. However, at the same time, South Africa's public infrastructure – roads, ports, power supply – did not improve, and in many instances even deteriorated.

Over the past decade the average annual growth in planted area for oranges, soft citrus, lemons and grapefruit was 1.5%, 17.6%, 15.1% and -0.8%, respectively. Budwood sales by nurseries suggest that the industry is still expanding, albeit at a slower rate. Over the outlook period, growth projections are more modest, with average annual growth projections of 0.8% (oranges and soft citrus), -1.0% (grapefruit) and 1.0% (lemons). Despite this, South African citrus area could reach well over 110 000 hectares by 2031.

Furthermore, the trajectory for volume over the outlook period is largely positive because of past expansion. In the most recently completed season, orange production reached 1.5 million tonnes, together with 626 791 tonnes of lemons, 591 021 tonnes of soft citrus, and 351 043 tonnes of grapefruit. Uncertainty around the long term sustainability of such production levels under current market conditions has increased markedly. However, the long term nature of the product means adjustments are slow and the recent and projected area expansions result in a projected 2.2 million tonnes of oranges, 1.0 million tonnes of lemons, and close to 900 000 tonnes of soft citrus, with grapefruit volumes expected to stabilize. Such volumes require additional market access and much improved port efficiency, both of which have been on the agenda for some time and have been prioritised under the newly signed Agriculture and Agro-processing Masterplan.

Citrus is the single biggest South African agricultural export by value, and exports play a critical role in the GPV. In 2021 this amounted to R25.4 billion, and could grow to over R40 billion by 2031 as production volumes increase and prices, supported by a weakening Rand over time, recover in nominal terms.

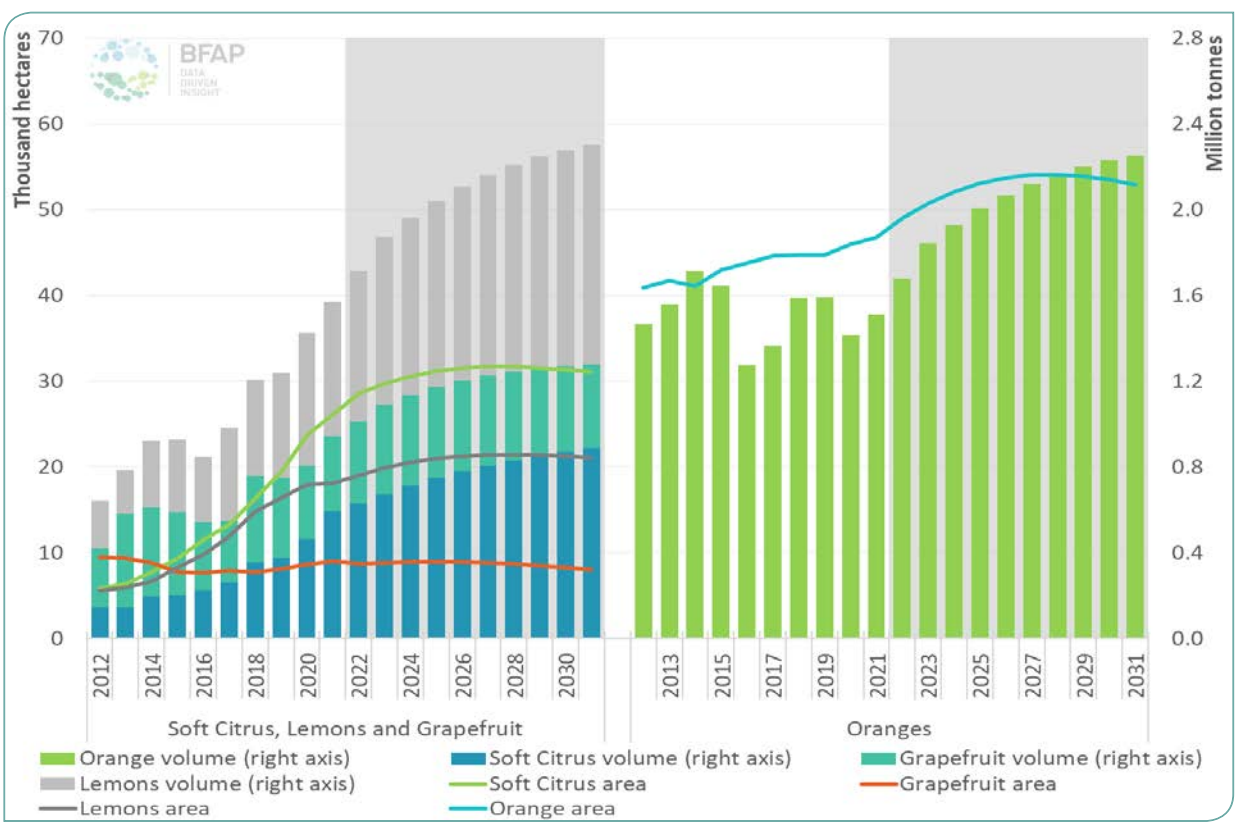


Figure 71: Citrus production area and volume: actual and projection (2012-2031)

BOX 7: TESTING THE IMPACT OF SHADE NETTING ON CITRUS PROFITABILITY

Given the anticipated continued price pressure in the industry, an alternative scenario was considered to compare the impact on profitability at farm level against the baseline. The analysis below is for an industry average distribution of commodities, yields, prices and production cost.

	Scenario: Investing in netting to improve pack outs
What	Erect netting after the 2022 harvest on all orchards not currently under nets to improve pack-out percentages from 2023 onwards.
Why	To determine the outcome over the outlook period considering the impact of stable yields, but higher export share and lower class 2 share within exports, increasing export price in the process as there are more class 1's.
How	Nets in 2022 @ R290 000 per ha. Total yields remain stable, but export share increases by 20% (e.g. from 70% to 90%). Avg. export price increase of 20% as more class 1s and almost no class 2s are exported from 2023 onwards.

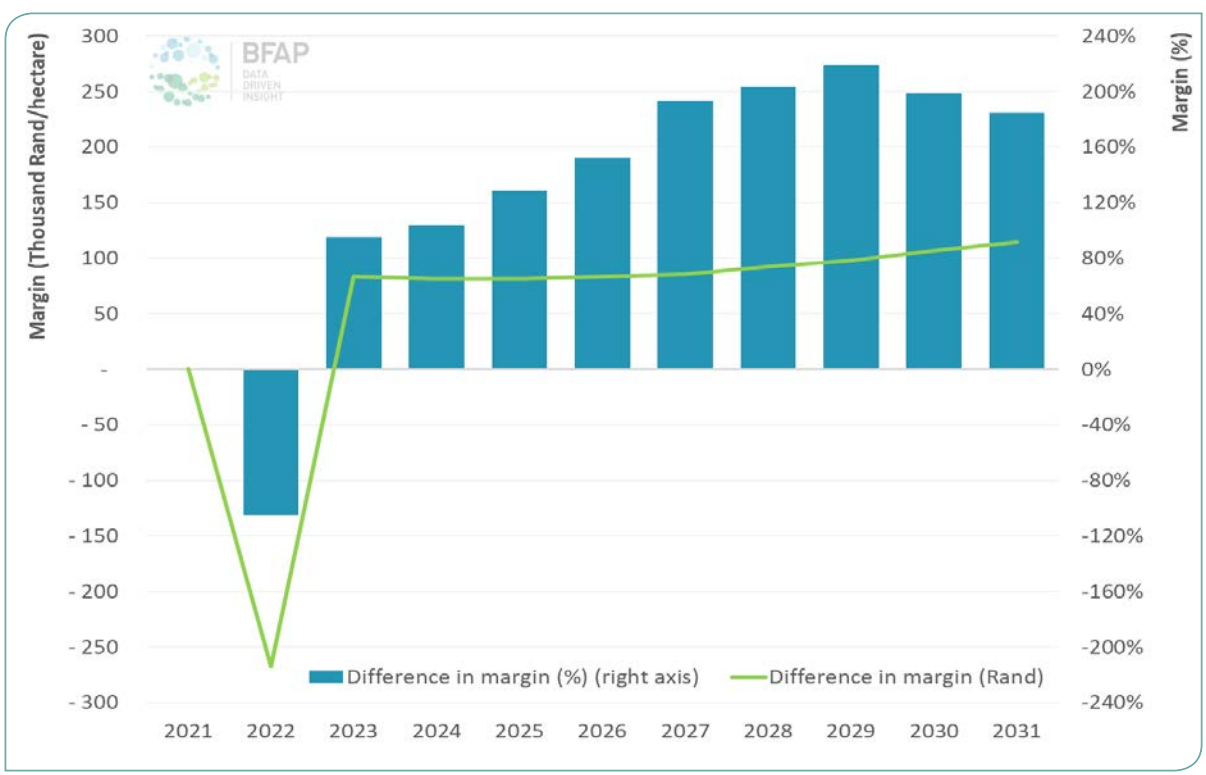


Figure 72: Difference in EBITA margin per hectare for the scenario compared to the baseline (2021-2031)

From a cashflow perspective, the negative impact of the outflow to erect the nets in 2022 is clear. However, over the outlook period is does make a significant contribution to stabilise profitability. The net effect over the outlook period is positive when comparing the EBITA/ha of the scenario with the baseline.

AVOCADO PRODUCTION

More than 80% of South African avocado production area can be found in Limpopo (58%) and Mpumalanga (24%), where the climate is conducive for subtropical fruit production. Over time the production area has expanded along the coastal provinces of KwaZulu-Natal (12%), the Eastern Cape (2%) and Western Cape (4%) (SAAGA, 2022).

Over the past 10 years, avocado area increased from just over 12 000 hectares to 15 439 hectares in 2021, resulting in growth of 28% over the period, or average annual growth of 2.4%. Production volumes grew at slightly more modest rates – 15% from 2012 to 2021, which is indicative of expansion in volume still expected over the outlook period as recent plantings start bearing and contributing to total output.

The avocado industry has had weather related challenges in recent years, nevertheless area is expanding (Figure 73), and this, together with higher density planting and cultivar development, is expected to drive volume growth. South Africa could well produce consistently more than 200 000 tonnes of avocados annually from 2027.

Despite the modest volume growth from 2012 to 2021 (15%), the GPV for avocados increased from less than R1 billion in 2012 to R3.0 billion in 2021, resulting in a growth rate of 238% over the period. With no indication of a slow-down in demand growth and with additional production output projected over the outlook period, GPV could very well double again in the next 10 years. Changes in market access and conditions in the EU and UK markets are pivotal in growing GPV.

NUT PRODUCTION

While macadamias and pecans are the most prominent tree nuts produced in South Africa, almonds, pistachios, and walnuts are also produced in small quantities. Pecans are primarily produced in the Northern Cape around towns like Upington, Prieska, Douglas and Hartswater, (Pecan South Magazine, 2018), while most macadamia production comes from KwaZulu-Natal (43%), Mpumalanga (36%), and Limpopo (16%) (SAMAC, 2022).

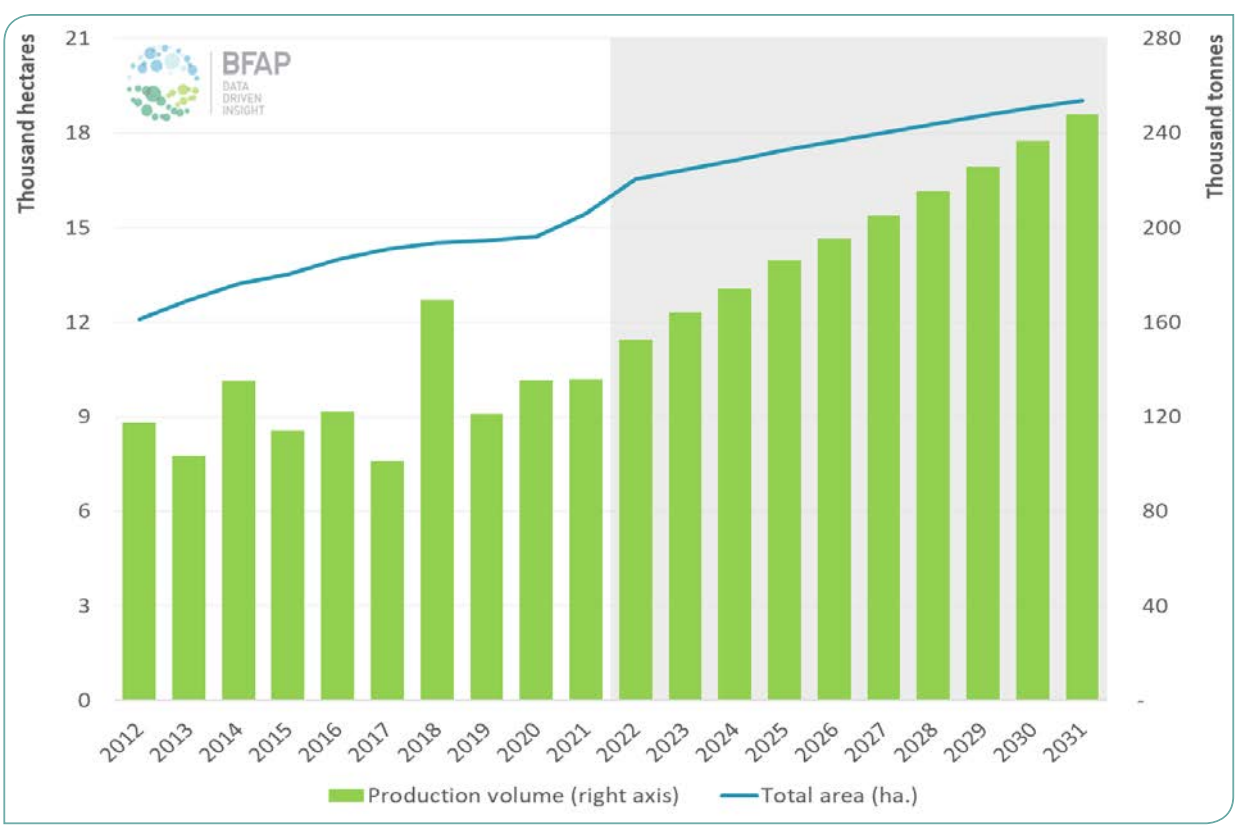


Figure 73: Avocado production area and volume: actual and projection (2012-2031)

Several similarities and some differences can be observed between these two nut commodities. Two similarities are worth noting: a) the share of total world nut production volume, and b) recent expansion in planted area domestically. Pecans and macadamias represent 3% and 1% of global nut production in a market dominated by almonds (31%), walnuts and pistachios (each 19%), cashews (16%) and hazelnuts (10%). A distinct difference between South African pecan and macadamia production, in the global context, is that South Africa is the world's largest macadamia producer, edging Australia in recent years. In comparison, despite being the third largest producer of pecans, South Africa (6%) is no match for Mexico (52%) and the US (39%).

Both industries have expanded tremendously over the past decade, with 10-year area growth rates in both industries around 200%, or a 13% average annual growth rate from 2012 to 2021. Due to the rapid area expansion and the very long period from establishment to full bearing, volume growth over the outlook period will mostly reflect existing plantings from now until 2031. Pecan trees are typically planted 10 m x 10 m – resulting in 100 trees per hectares, compared to the industry average of 313 macadamia trees per hectare. Industry norms for macadamia yields per hectare are higher than that for pecans, as is evident in the area and yields displayed in Figure 74.

From a GPV perspective, it is estimated that the macadamia industry in South Africa grew from around R800 million in 2012 to just short of R4.8 billion in 2021, with some 55% growth in total volume (measured nut in shell). For pecans, growth was from R350 million in 2012 to R1.5 billion in 2021, with average annual nominal GPV growth of 19%, whilst volume annually grew by 11.6%, on average, over the same period. Considering the lag between planting and production, these industries could well double over the next 10 years. Demand growth for these almost-niche nuts will be an important factor in price stability and farm level sustainability in the future.

TRADE

Whilst production area and volume have expanded over the past couple of years, exports have been hampered by mounting challenges. All of these industries are dependent on exports to sustain operations. When major disruptions put investments in farm, packhouse and cooling facilities at risk, it also puts jobs and livelihoods in rural areas at risk.

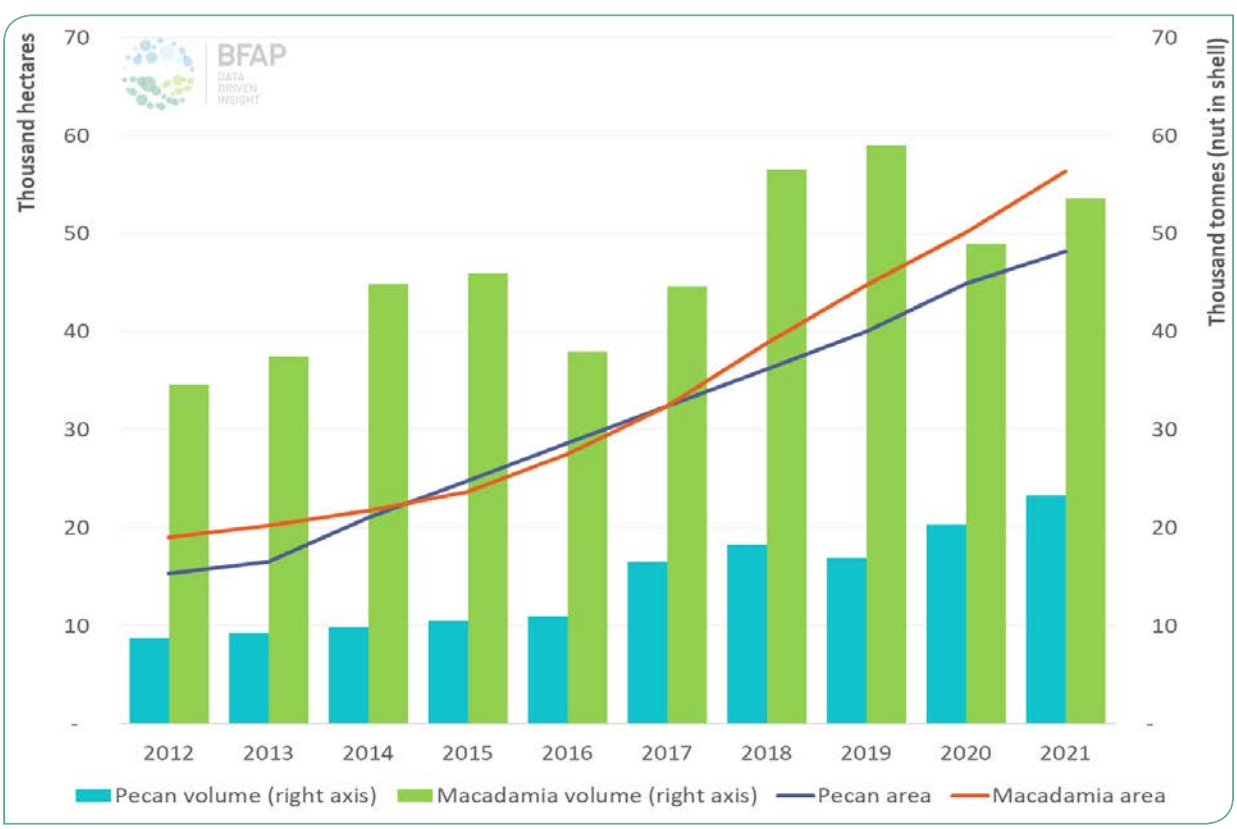


Figure 74: Nut production area and volume: actual and projection (2012-2021)

CITRUS EXPORTS

Export markets for South African citrus, in order of importance, are the EU (34%), Middle East (18%), South East Asia (14%), the UK (10%), Russia (8%), North America (8%), Asia (7%) and Africa and Islands (1%) (CGA, 2022). The EU has recently legislated a new protocol for orange imports from third party countries where false codling moth Thaumatotibia leucotreta is present. This entails additional cooling requirements at lower temperatures to prevent any opportunity for the detection of live moths at inspection. The impact on the South African orange industry could potentially be devastating in two ways. Firstly, infrastructure such as cooling facilities in South Africa is not geared towards the increased demand for cooling and the temperatures required by the new protocol. Secondly, the new protocol could potentially prevent the export of several important cultivars as well as all organic and non-chemically treated oranges that cannot tolerate the treatment (Fruitnet, 2022; Jansen, 2022).

In 2021, 75% of citrus marketed was for exports, with the complement going to local fresh markets and processing. The 75% of production that was exported contributed to 95% of revenue in the industry. The growth in the industry – historically and projected – is driven by opportunities to generate revenue from exports. Figure 75 suggests that, especially for soft citrus and lemons which have expanded substantially, export prices played a major role in investment decisions. In 2020, when the Rand weakened greatly whilst demand for citrus was especially strong globally, producers realised good returns. However, in 2021, production costs at farm level increased sharply, on average around 15%, driven by increases in the cost of labour, electricity and imported inputs, whilst prices returned to longer term averages as the Rand regained some value. Shipping costs placed a further damper on net export realisations.

Projections of the growth in exports volumes are similar to those for production growth. This trend could change, with a larger share of produce exported in future as a result of higher pack-out percentages at farm level. Strategies to reduce hail, wind markings and other defects, such as erecting netting structures, should increase the class 1 share of fruit at orchard level.

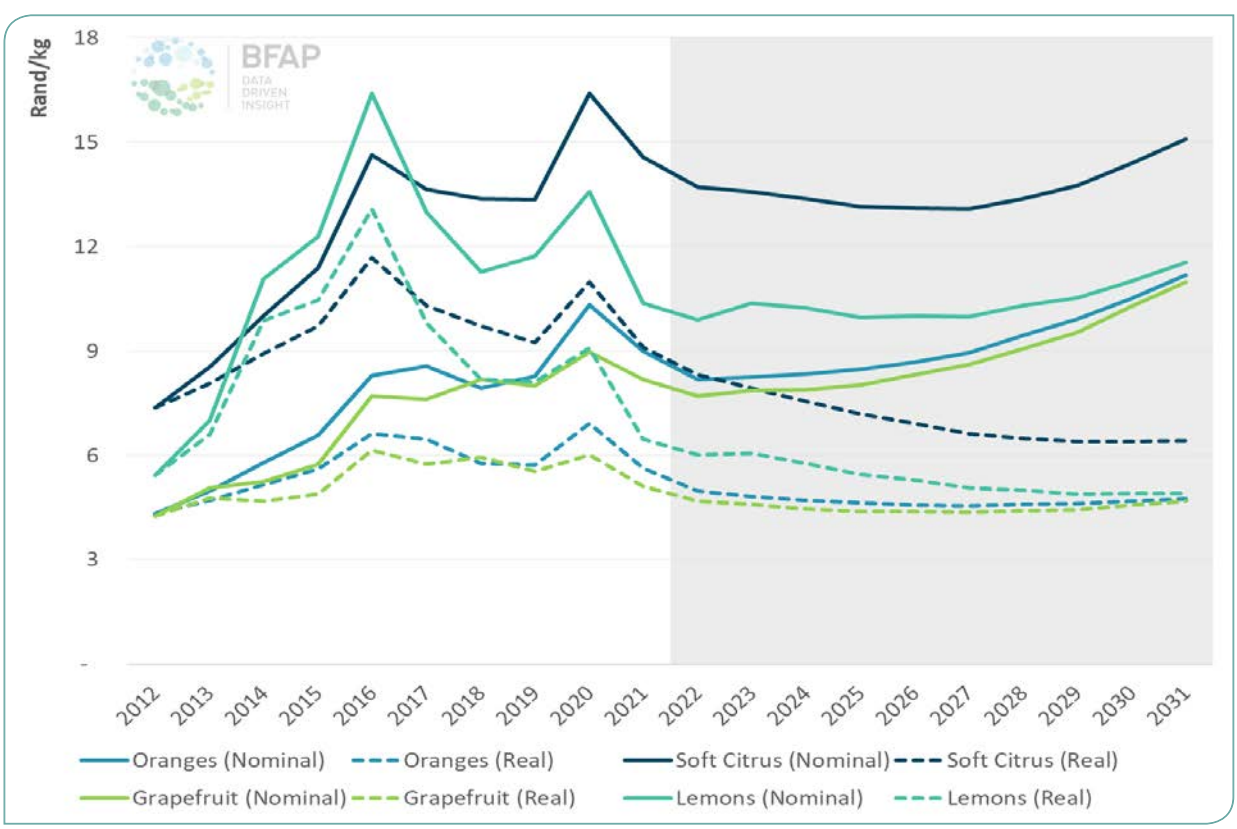


Figure 75: Citrus export prices: actual and projection (2012-2031)

Considering the projected volume growth, nominal export prices are expected to remain under pressure in the near term as overstocked markets and increased freight cost affect net realisation. The current situation, with limited volumes making their way into the Russian market, is another cause for concern, especially for class 2 fruit that typically found offtake in Russia.

Over the coming decade, price movements are such that real, inflation adjusted levels stabilise at around 2012 levels. This implies that nominal prices, supported by a weakening Rand over time, are expected to reach 2016-levels for soft citrus, 2018-levels for lemons and new industry average levels for oranges and grapefruit of around R11 000/tonne.

AVOCADO EXPORTS

The most important market outlets for South African avocados are the EU and the UK. Market access and favourable tariff structures would result in South Africa being less dependent on these markets, but, at least for the foreseeable future, demand is continuously growing in these markets. Competition in the market is also rising as Peruvian exports enter the EU and UK. Since 2018, avocado export prices have increased in real and nominal terms, with demand growth outpacing supply in the market. New cultivars in specific, earlier marketing windows are targeted at avoiding direct competition with Peruvian exporters who are strong from May to September. International prices have stabilised over the last two years, but a depreciation in the Rand over the outlook period results in a positive outlook in nominal terms for avocado exports. However, in real terms, the outlook moves largely sideways, putting pressure on farmers to improve their production efficiency.

With producers focusing on the export market as the primary outlet, and the limited expansion opportunities in the local market, avocado exports are expected to double over the outlook period.

NUT EXPORTS

China is the most important trade partner for uncracked nuts for South Africa, with an uptake of 80% of in-shell macadamia and 96% of the pecans (96%). There has been a gradual shift in macadamia exports, with a greater share going directly to China in the last 5 years, as opposed

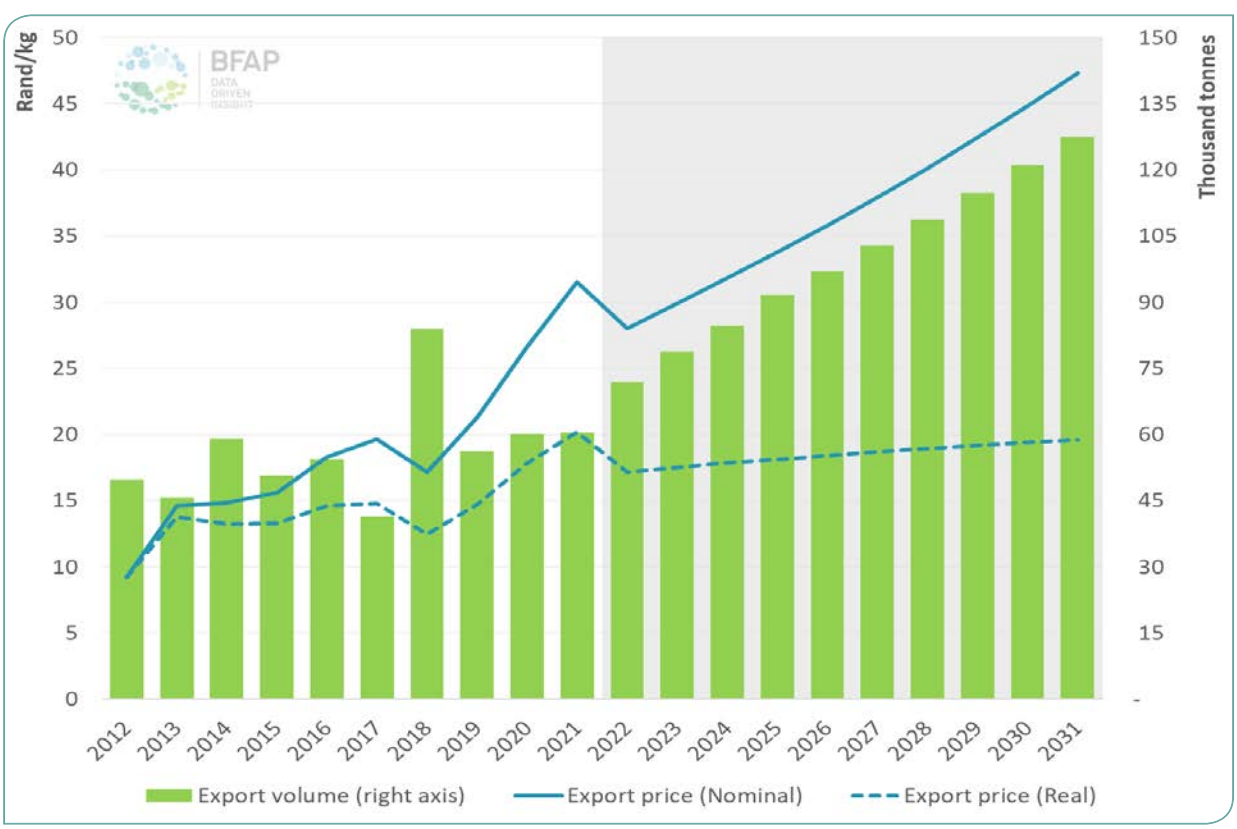


Figure 76: Avocado export volumes and prices: actual and projection (2012-2031)

to Hong Kong. Some nut-in-shell macadamias are also destined for Vietnam (19%). Shelled nuts, or kernel exports, are mainly destined for the EU, the US and the UK, with some shelled macadamias also exported to Vietnam (ITC, 2022).

In 2021, 57% of total macadamia exports were kernel based (SAMAC, 2022). In the case of pecans, around 7% are processed in South Africa into kernel form, of which the bulk is exported, and a small share absorbed in the local market (SAPPA, 2022).

Figure 77 presents the total traded volumes, Rand unit price and US$ unit price. Although they follow fundamentally different export strategies, namely majority kernel vs. majority nut-in-shell, macadamia export prices have ticked up slightly in nominal US$ terms over the last ten years, whilst dollar-denominated pecan export prices remained flat, turning slightly downward since 2018. The exchange rate thus explains the changes in nominal Rand terms.

Considering the additional planted area still to enter production, substantial growth in export volumes should be expected. Given that South Africa is already the world's largest exporter of macadamias (although macadamias comprise only 1% of total nuts), and is currently the third largest exporter of pecans (9.5% of trade volume in 2021), where pecans comprise 3% of total nuts, growing consumer demand for these particular nuts in raw or processed form will play a critical role in sustaining current prices over the outlook period.

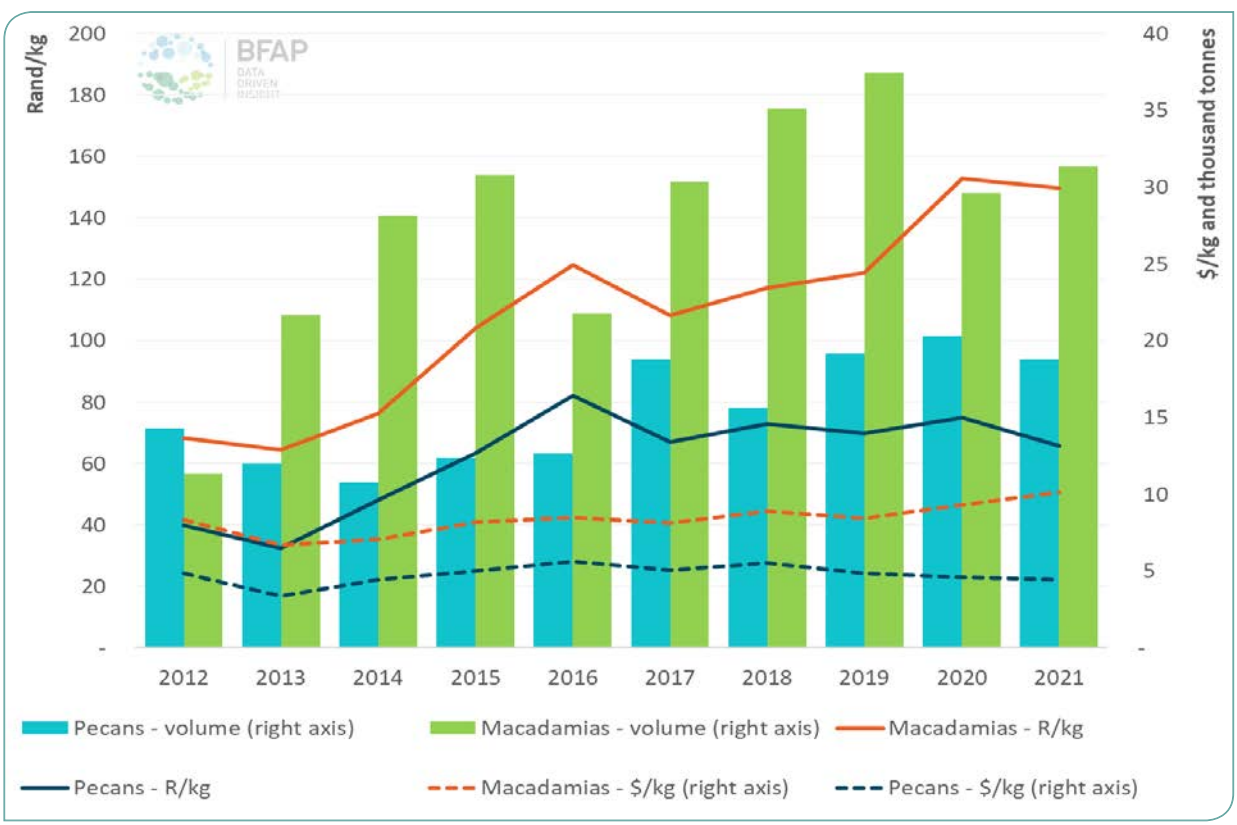


Figure 77: Nut export volumes and prices: actual (2012-2021)

BOX 8: CONSUMER FOCUS: NUTS

With rapidly growing production of pecan and macadamia nuts in South Africa, the expansion of both domestic market and international market demand is critical. This will require market research initiatives to better understand consumers' current behaviour and perceptions, with specific attention to research questions such as:

- Where and how often do consumers purchase the various tree nut options?
- How sensitive are consumers to price changes for different types of nuts?
- How important is country-of-origin to consumers in the context of nut consumption?
- How important is sustainability considerations to consumers in the context of nut consumption?
- How and when do consumers substitute between the various types of nuts?
- How do consumers currently use the various types of nuts?
- The perceived knowledge, advantages and disadvantages of various tree nut options (from both a culinary and a nutritional perspective).

Stimulating consumer demand for pecan nuts and macadamia nuts could be based on several pillars, including health/nutrition, product use applications and sustainability considerations. Marketing strategies based on multiple 'pillars' will most likely be most effective, responding to an optimal combination of consumer needs. Consumer research is needed to understand consumers' acceptance of various marketing message combinations.

Pillar 1: Health & nutrition

Given the rising awareness of health and wellbeing among consumers in South Africa and internationally, the health benefits of nuts as a functional food has been a key driver of increased nut intake. Examples of the health benefits of pecan and macadamia nuts include:

- They are a good source of fibre.
- They are rich in heart-friendly mono-unsaturated fats and antioxidants linked to the lowering of cholesterol and thus the reduced risk of heart disease.
- They contribute to the intake of vitamins like Vit B1 (thiamine) and minerals like magnesium, calcium, potassium, manganese, zinc and copper.

Consumer education on the health benefits of pecan and macadamia nuts specifically (unique health benefits and those 'shared' with other nut types) can be a major consumption driver going forward. However, this should be backed by sound, science-based evidence as a basis for the marketing messages.

Nuts are also recognised as an alternative (plant-based) protein source, thereby opening up market growth possibilities aligned to the rising popularity of vegan/vegetarian diets, as well as flexitarian diets, because mostly younger consumers of the Millennial and Generation Z generations are reducing their meat intake in favour of alternative plant protein foods such as nuts, seeds and legumes. Nuts can also be marketed as a healthy comfort food.

Pillar 2: Product use

Continuous product development and innovation should focus on the inclusion of the particular nut varieties in processed food products such as breakfast cereals, snack foods and baked goods. Furthermore, innovation and consumer education on interesting ways to use nuts as stand-alone snacks and as ingredients in meals prepared at home could also help to stimulate demand.

Pillar 3: Sustainability considerations

As mentioned above a comprehensive understanding of consumers' perceptions regarding sustainability in the context of nuts is critical. Furthermore, it is also important to objectively evaluate the sustainability performance of various nut types (including nutritional, social and environmental sustainability aspects). This will enable the formulation of clear and science-based consumer messages pertaining to sustainable nut choices.

DOMESTIC USE

This suite of commodities – citrus, subtropical fruit and nuts – are consumed across the whole spectrum of consumers in South Africa. Oranges are one of the most affordable fruit types, whereas nuts and speciality soft citrus are mostly consumed by people with higher incomes. Avocados and lemons are considered in-season staples in many restaurants and households.

Despite the wide range of consumers and appetite for these products domestically, total consumption volumes remain limited, with the exception of avocados, where local fresh consumption is estimated to be more than exports when considering the informal market as well. As a result, the industries in question are destined to become even more reliant on export markets.

FRESH CONSUMPTION

Figure 78 presents the volumes absorbed in the local market. Despite a growing population, South Africa's consumption of these commodities remains modest. Over the last three years, domestic sales have increased from 204 205 tonnes to 232 661 tonnes, overtaking the 2018 record of 228 244 tonnes. It is also clear that oranges have been substituted with soft citrus over time, which is indicative of produce availability, affordability and consumer preferences changing over time.

Fresh local consumption is expected to continue its sideways movement over the outlook period, with potentially more citrus entering the local market, depending on market demand. If market prices do not account for the risk and cost of packaging, market, transport and commission, this is likely to result in an increase in processing volumes.

PROCESSING CONSUMPTION

The processing market for these fruits in South Africa is fairly saturated. Citrus processing prices, with the exception of grapefruit, have decreased in nominal terms in the last couple of years. In 2016, the price for a tonne of oranges was R1 002, in 2021 that same tonne yielded

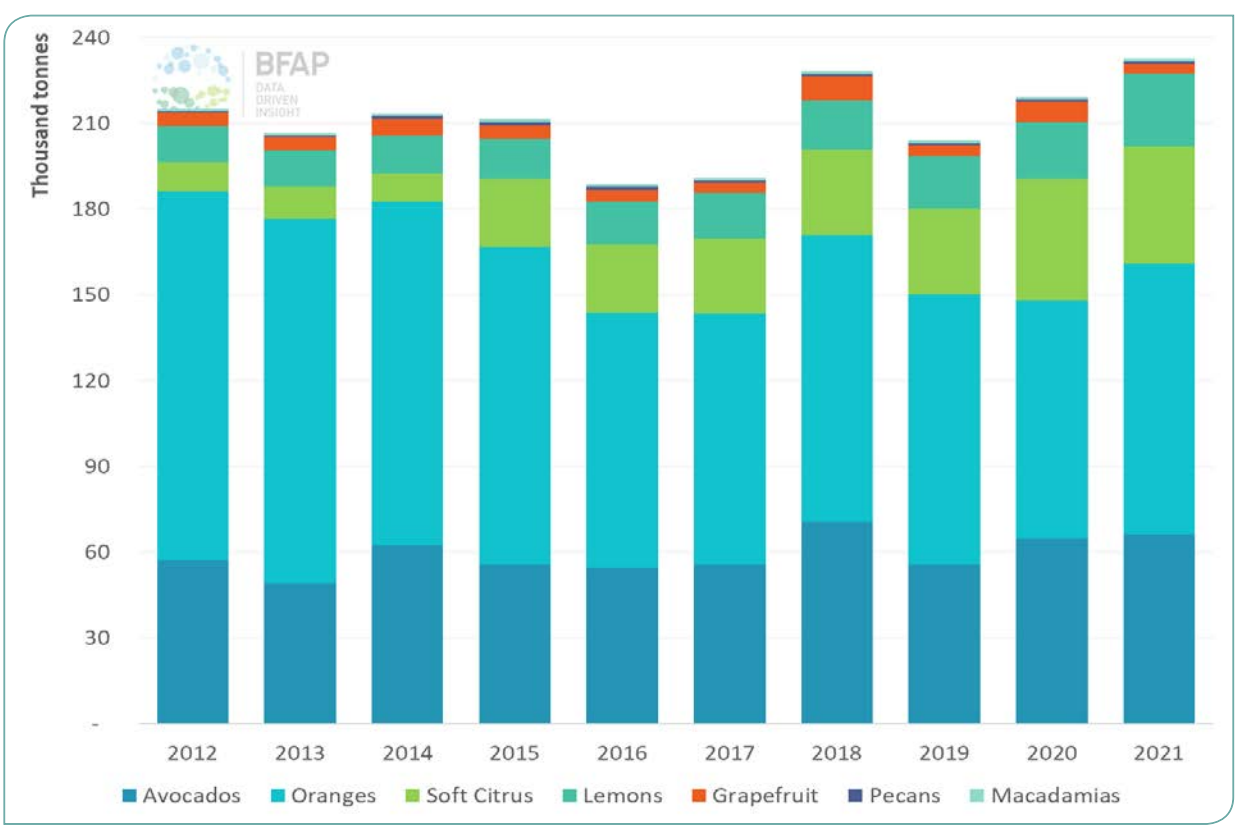


Figure 78: Citrus, subtropical fruit and nuts supply to the local market: actual (2012-2021)

R639, whilst production costs increased. Similarly, the prices for soft citrus and lemons in 2016 were R532 and R1 842/tonne, whilst averaging R366 and R568/tonne in 2021 respectively. Despite these price movements, this market is also likely to expand over the next ten years, with growth of 98% expected, albeit from a much smaller base compared to exports. A processing component will always be a part of the total crop, as cosmetic fruit defects limit fresh marketing opportunities.

Some opportunities exist for expanding processing capacity and capability in the nut industries to generate additional employment and to add value by deshelling nuts and expanding marketing opportunities to final consumers.

CONCLUDING REMARKS

From this outlook, there are three distinct and overarching take aways: 1) increasing production volumes, 2) the importance of stimulating consumer demand, and 3) the need to build, maintain and protect value chain operations.

Whilst a previous cycle of high demand resulted in good farm gate returns, instigating investment in primary production (i.e., expansion in area), the pandemic ignited a series of serious challenges in world trade. Social, economic and political changes have impacted demand – domestically and globally – and this in a time where supply is growing considerably. To make the situation worse, the inefficiency of logistical service providers – port operators and shipping lines – combined with astronomical freight prices are cause for concern throughout the value chain, but especially at farm level. Investment sustainability is put at risk as more of the additional costs in the chain are pushed backwards onto producers rather than offloaded on to consumers. Rethinking of production models and value chains is essential to weather the current storm and one could well see some contraction in volumes and area if producers fail to react and the status quo strategy remains in place over the medium term.

WINE GRAPES AND WINE




South African wine and wine products generated value through producer revenue of R6.6 billion, exports valued at R11.1 billion, and domestic sales before excise tax and VAT of R14.9 billion in 2021 (ITC, 2022; SAWIS, 2022). Furthermore, together with wine tourism and other downstream value generation from the industry, the industry's total annual contribution to GDP is estimated at R55 billion (FTI Consulting, 2021).

Global wine production declined by around 1% to 26.0 billion litres in 2021, with a sharp reduction recorded in some EU countries that were affected by late frost. Production from the Southern Hemisphere rebounded after a woeful 2020 production year. Whilst the former created additional opportunities for exports for South Africa, the latter means that it is by no means an underserved market. Domestically, the wine industry is still dealing with the aftermath of the restrictions imposed on alcohol transport and sales during various lockdown periods imposed in response to the pandemic (Davids, et al., 2022). Stocks are at record levels, resulting in lower real wine prices and a reversal of the premiumisation strategy. Amid ongoing attempts to clear stocks and rebalance the market, 65% of wine exports occurred in bulk format in 2021 – a record in recent years.

The wine industry is not immune to the impact of other exogenous factors that affect agriculture and South Africa's economy as a whole. For industries that derive substantial revenue from international trade, one of the biggest challenges of the past year has been the global supply chain disruptions, which have been accompanied by logistics congestion and freight rate hikes. For those that trade domestically, increasing pressure on consumer spending power and possible stagflation are important considerations.

The outlook for the wine industry, whose products are split almost half and half into domestic and international markets, must be considered against this backdrop.

INTERNATIONAL MARKET OVERVIEW

Global production area, production volume, hemisphere dynamics and consumption in a pandemic and post-pandemic context are all important factors that influence the environment within which South African wine producers operate. Changes to supply take much longer than is the case of consumption, which has implications for prices.

From a supply perspective, global vine area (including wine, table grape and raisin) has declined consistently, albeit at a modest rate of 0.3% per annum over the last 20 years. In 2021, total global area reached 7.3 million hectares, of which 3.3 million was planted in EU countries.

This amounts to a share of 45%, with Spain, France and Italy featuring prominently, where vines comprise mostly wine grapes. Collectively, the EU produced 59% of the world's wine in 2021. The US, with total area on the decline since 2014, occupies the sixth position in terms of area, with vines for the production of table grapes and raisins also planted along with vines for wine production, and the fourth position in terms of wine production. South Africa occupies the 15th position in terms of area (1.7% of world total), but produced 4.1% of the world's wine volume in 2021 (eight position). In all these cases, shares of production are greater than the share of area, which is indicative of higher vine productivity, which could be related to cultivar choice and cultivation practices and/or ratios of vines for wine and vines for other grape production (OIV, 2022).

In terms of demand, the aforementioned, with the exception of South Africa, feature at the top of consumption tables, led by the EU (48% of world), the US (14% of world), and the UK (6%). South Africans consume around 2% of the 23.6 billion litres estimated to have been consumed globally in 2021. What is apparent here is that the EU and South Africa consume less than they produce, whilst the US and the UK experience a net deficit between production and consumption, necessitating imports to meet demand.

Figure 79 compares world wine production to wine consumption, with per capita consumption on the right axis. Concerningly, it shows that wine production is consistently higher than wine consumption, which has trended downwards over the last 5 years. The industrial use of wine – distillations, as well as the production of vinegar and vermouth – do explain some of the difference, although that component has also shrunk over time. Estimations by the OIV (2013; 2019) points to industrial use of between 3 and 4 billion litre per annum between 2000 and 2016. Wine production, on the other hand, boomed in 2018 after a particularly poor year in 2017, and has since stabilised around the 26 billion litre mark (OIV, 2022). The combination of trends in production and consumption suggests that stock levels are rising, which could reflect in prices in coming years.

In per capita terms, for persons over the age of 15, as recorded by the WHO (2022), sharp declines have been recorded for France and Italy, which are the world's second and third biggest consumers of wine in terms

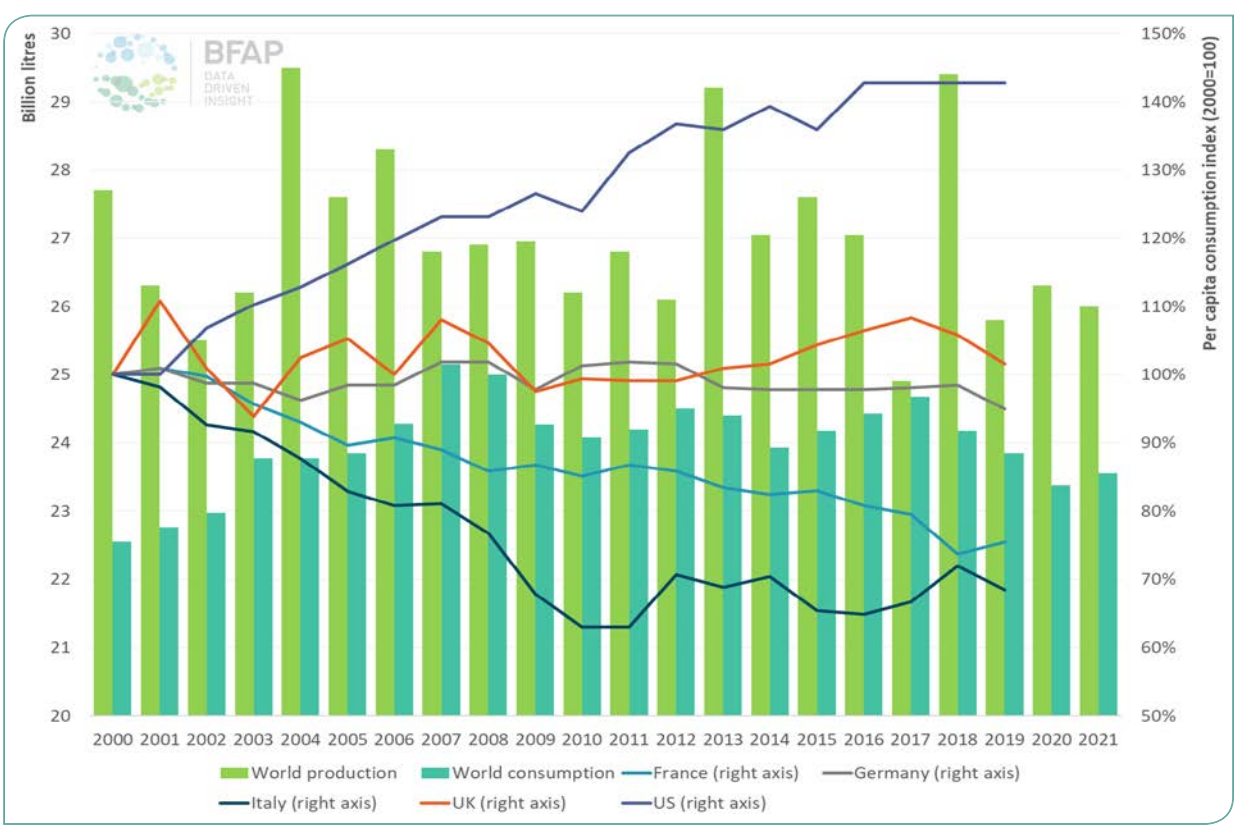


Figure 79: Total production and consumption and per capita consumption in selected countries (2000 to 2021)
Source: Adapted from OIV, 2022 and WHO, 2022

of volume. Per capita consumption in Germany (fourth) and the UK (fifth) appears to be stable, and COVID-19 related challenges seemed to not deter consumption in a big way at national level. In the US, the world's biggest consumer of wine, per capita consumption has increased considerably over the past 20 years, but this has been from a very low base and has stabilised since 2016. With per capita consumption in France and the US trending in different directions, US per capita consumption relative to France's increased from 14% in 2000 to 26% in 2019, substantiating that consumption west of the North Atlantic Ocean remains far lower than east of it.

If these trends of declining consumption are to continue, driven by lower per capita consumption in major wine drinking countries, and total wine production remains stable, it will create a tougher global environment for South African wines to compete in.

DOMESTIC CONSUMPTION

Domestically, the wine industry is yet to recover to pre-pandemic levels, although sales did increase year on year. In 2021, South Africa's domestic sales amounted to 67 million litres more than in 2020, but this still lags the 5-year average for 2015-2019 by 7.3%. Table 10 considers only the past 3 years and illustrates a shift in the packaging type, which normally also accompanies changes to the price tag. Whilst year-on-year trends are positive for all four types of packaging mentioned, the sales of wine in glass and plastic bottles, as well as wine in tetra packs and other packaging shows double digit contractions compared to 2019. Conversely, bag-in-box sales increased by over 27 million litres (19.2%) from 2019 to 2021, overtaking glass bottles as the single most used container type by sales volume since 2020. Glass bottle wine sales was the biggest loser in absolute terms, with a 20.7 million litre (±27.6 million bottles) decline, with another 10 million litre decline collectively for plastic and tetra pack wine sales (SAWIS, 2022). Two factors contributed to this phenomenon. Firstly, the challenges with cost and availability of supplies, exacerbated by high fuel prices and increased labour cost at source, which increased the cost of packing materials. Combined with the global logistics crisis, this could have resulted in the bagging of wine as the only alternative way of getting it ready for consumption (Swindells, 2022). Secondly, the current depressed economic climate played a role in the container choices of South African consumers. In some instances, selected premium brands are becoming available in bag-in-box format, with acceptance increasing, but this format is still dominated by a consumer base that chooses the container type for its value.

Figure 80 presents domestic wine and brandy consumption and highlights some notable short and longer term trends. Firstly, total still wine consumption is projected to increase over the outlook period at an average annual growth rate of 1.5%. At the end of the projection period, still wine consumption is 0.5% lower than the previous record year – 419 million litres in 2031 compared to the 421 million litres in 2018. Thus, whilst trending upwards over the outlook period, the growth is rather modest and comes from a substantially reduced base following the shocks of 2020 and 2021.

Secondly, whilst total still wine sales grew from the 2009-2011 average to the period 2017-2021, the biggest relative and absolute growth is observed in the 'low and basic priced wine' category. This category refers to wine that sells at less than R48 per litre at retail. This change could be attributed to wine selling at a discount due to the drought affecting quality and/or a relative shift between bag-in-box and bottled wine during this period, whilst absolute consumption levels increased. From 2009 to 2011, glass container sales were used in 48% of wine sales by volume, compared to the 43% for the 2017 to 2021 period. From the basis, the outlook for the different price categories shows that low and basic priced wine remains the bulk of local consumption, with the growth in additional volumes projected primarily in this price

Table 10: Particulars of container type for wine sold domestically (2019-2021)

	2019	2020	2021	2021 vs 2019	2021 vs 2020
Glass	159 729 272	121 512 498	139 020 351	-13,0%	14,4%
Bag-in-box	141 594 369	126 277 631	168 803 425	19,2%	33,7%
Plastic	42 045 144	28 527 836	34 304 713	-18,4%	20,2%
Tetra packs & other	12 954 652	9 215 867	10 555 850	-18,5%	14,5%

Source: SAWIS, 2022

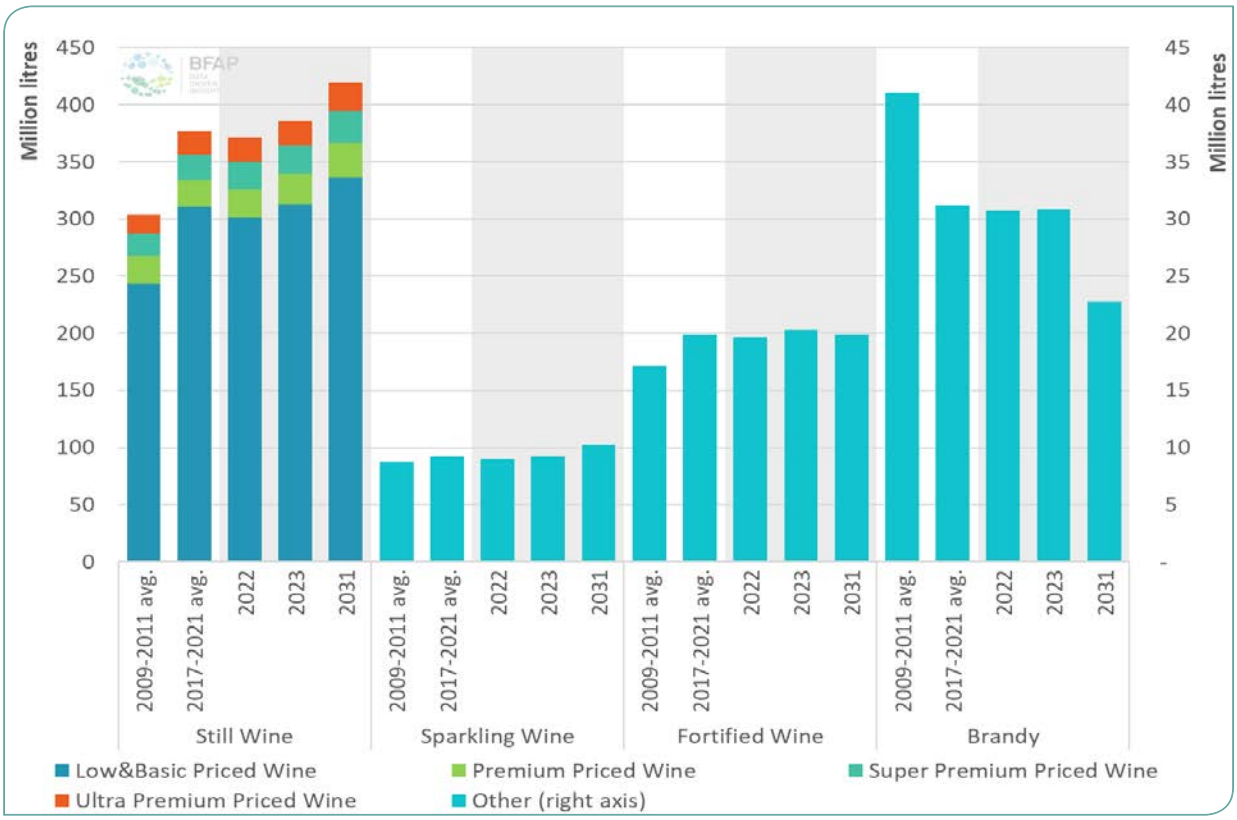


Figure 80: Wine and Brandy consumption in South Africa: 2009-2031

Source: SAWIS, 2022 & BFAP Projections

category, with average annual growth of 1.3% projected towards 2031. For the premium categories – premium, super premium and ultra-premium – projections reflect average growth of 3.2%, 2.1% and 1.0% per annum respectively over the outlook period. Despite the absolute volume growth projected in the low and basic category, the growth in the premium categories signifies an important positive trend in terms of the willingness to pay for wine on the domestic market.

Thirdly, higher consumption levels are recorded for both sparkling and fortified wines in 2021, with a sense of normalcy around sales returning. Slight relaxations in year-on-year sales are expected in 2022, as consumer spending power comes under pressure in a stagflation environment. In the medium term, growth is slow, but positive towards 2031 for sparkling wine (0.9% average annual growth). Lastly, brandy consumption has been trending downwards since 2008 and this trend is expected to continue over the outlook period. In fact, the current outlook plots brandy consumption in 2031 at 53% lower than in 2007, alluding to a definite switch in strong alcohol preferences in the domestic market.

According to Euromonitor International (2021), the illicit alcohol trade amounted to R20.5 billion in South Africa in 2020, of which smuggling was the biggest share. Spirits – vodka, whiskey, brandy, and other strong liquor, are the most commonly traded products in the illicit alcohol market. The illicit trade industry negatively affects all types of legal alcoholic sales in some way, but brandy sales, and low priced wine, could be affected more, as smuggling (31%) and counterfeiting (23%) are some of the largest illicit trade categories by volume.

BOX 9: CONSUMPTION TRENDS OF WINE IN SA

Which alcoholic beverages are most popular in SA?

According to the 2021 BrandMapp survey[9], conducted on upper middle income and affluent consumers, the most popular alcoholic beverages in SA are wine (consumed 'often' by 43% of upper middle-income and affluent consumers), followed by gin (33%), beer (28%) whiskey (25%), cider (24%), vodka (15%), cognac (9%), pre-mixed coolers (7%), brandy (7%) and rum (4%).

How did wine consumption change over time?

From 2018 to 2021 the share of upper middle-income and affluent consumers drinking wine 'often' decreased from 55% in 2018 to 38% in 2020, with recovery to a level of 43% in 2021 (Figure 81). While the share of beer drinkers remained relatively constant, gin drinkers increased from 12% to 33% (BrandMapp surveys, 2018 to 2021) taking market share away from wine. The appeal of gin is strongly rooted in the gender-neutral image of the product (appealing more or less equally to male and female consumers), as well as the 'funky' product image and wide variety of product options available in terms of flavours and artisanal product variations available. Wine is consumed by approximately 33% more female than male consumers. Furthermore wine popularity tends to increase with age, product knowledge and usage experience.

At-home or out-of-home consumption?

The COVID-19 pandemic has increased the popularity of the at-home consumption of alcoholic beverages, initially driven by the avoidance of public settings in order to reduce personal risk exposure. In 2021 IWSR reported that about a third of South African alcoholic beverage consumers were keen to return to out-of-home settings, while the majority

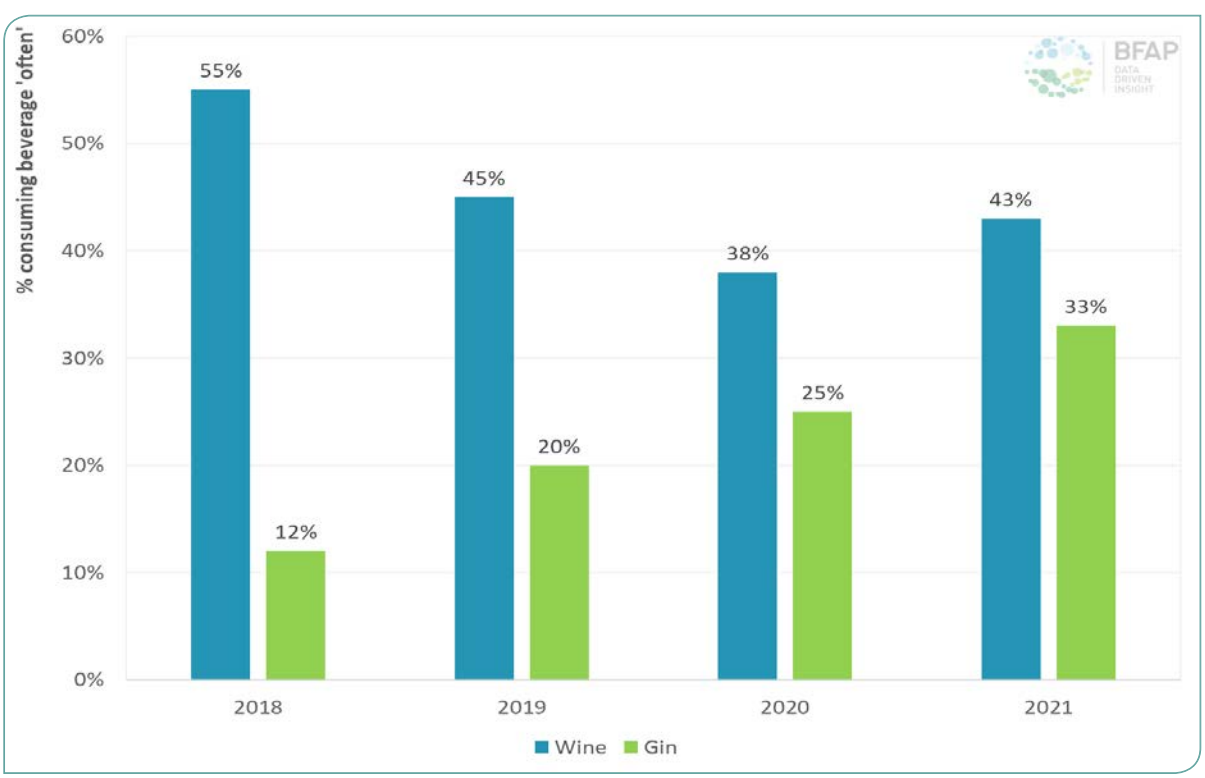


Figure 81: Consumption trends of wine and gin from 2018 to 2021

Source: BrandMapp surveys, 2018 to 2021

[9] BrandMapp Survey of more than 33 000 upper middle-income and affluent consumers with income of more than R10 000 per month in South Africa. Summary of results published by Drink Stuff SA (2021).

BOX 9: CONSUMPTION TRENDS OF WINE IN SA (CONTINUED)

of sampled consumers were still cautious and more likely to focus mainly on at-home consumption. According to an industry expert[10] South African consumers have also found a larger variety of at-home drinking occasions due to the pandemic, where a wider variety of products are consumed, rooted in consumers' needs for indulgence, enjoyment and social connectivity within their own or their friends' home environment (Drink Stuff SA, 2022). This is expected to remain a relevant factor. The 2021 Great Big Wine Survey also revealed that the dominant wine perceptions were: "It's for relaxing", "Makes ordinary meals special" "It's for socialising" and "It's for everyone" – all potentially linking to at-home wine drinking occasions and socialising.

What about gender?

The pandemic stimulated consumer participation in mixed-gender drinking occasions (often in a home setting), as well as a demand for gender-neutral alcoholic beverages (Drink Stuff SA, 2022) – e.g. driving gin demand as mentioned above.

Buy where?

The pandemic contributed to a rise in the online purchasing of alcoholic beverages (IWSR, 2021), which is expected to continue and evolve going forward, even if it retreats somewhat in the short term as the threats of the pandemic subsides (Engineering News, 2022).

Value for money is critical

The challenging economic climate is fuelling the need for value for money, addressed by aspects such as bulk pack formats, shareability and re-sealability (Drink Stuff SA, 2022).

Product and packaging innovation:

With growing demand for ready-to-drink alcoholic beverages, product characteristics such as serving size, style, packaging, pre-chilling, carbonation and blended products are becoming more prominent (Engineering News, 2022). According to the 2021 Great Big Wine Survey consumers are becoming more open to alternative wine packaging options such as tetra pack cartons and cans.

Health awareness and lighter alcoholic beverages:

The COVID-19 pandemic has heightened consumers' awareness about health and wellbeing, driving the global increase in lower-alcohol and alcohol-free beverages – while still satisfying consumers' needs for exceptional taste experiences (Drink Stuff SA, 2022). A movement away from alcoholic beverages is most likely amongst Millennials and younger generations, with BrandMapp 2021 revealing that 37% of Millennials indicating a willingness to reduce future intake of alcoholic beverages.

Rising sustainability awareness:

There is a rising consumer awareness regarding the actions behind brands affecting sustainability, with a particular focus on social sustainability, environmental sustainability and supporting locally produced alcoholic beverages (Drink Stuff SA, 2022).

[10] Insights from the marketing director for Distell as reported by Drink Stuff SA (2022).

TRADE

At aggregate level, South Africa produced around 4.1% of the world's wine in 2021, and consumed around 1.7%, making trade a clear and necessary component of the industry's market strategy. Given the challenges of 2020 – restrictions on the transport and trade of alcohol, South Africa's wine stock levels shot up to record levels, resulting in a mass export of mostly bulk wine to stabilise the situation domestically. Bulk wine, domestically deemed as such when the packaging volume is larger than 10 litres, as provision is made to consider the sub-category of 2-10 litre containers as packaged, is mostly exported in 24 000 litre flexibags, which are fitted inside general purpose 20 ft containers. In 2021, 265.7 million litres of wine was exported to countries outside SACU in bulk form, the third highest figure after 2013 and 2017. Year on year packaged wine exports also increased, as would be expected, given the low base of 2020, but the 145.5 million litres of packaged exports were modest at best. In fact, it is the third lowest volume over the last decade, edged by the drought stricken production seasons leading to record low packaged exports in 2019 and the COVID-19 related 2020 export season (SAWIS, 2022).

Opportunities for additional bulk volume exports came in the form of industrial wine to Italy, and substantial increases to the US, Canada and China. Increased exports to Italy was largely the result of the lower production levels in 2021 in the EU, with the trade war between China and Australia creating an opportunity for additional South Africa wine exports to the far East. In addition, prices, freight rates and logistical challenges played a role. It remains to be seen whether these markets are truly established or if they will disappear when production volumes and the global freight situation has stabilised. Despite the growth, the UK and Germany remain key, longstanding markets for South African bulk wine exports (Figure 82). The 45.5% year on year increase in bulk exports returned a 26.8% increase in total value, pointing to a negative impact on unit value. The strengthening of the Rand in 2021 compared to 2020, together with the additional industrial wine export volumes, have affected bulk wine unit prices negatively.

Figure 83 shows the top 10 importers of South African packaged wine by volume, with value indicated on the secondary axis. In total, packaged wine exports increased

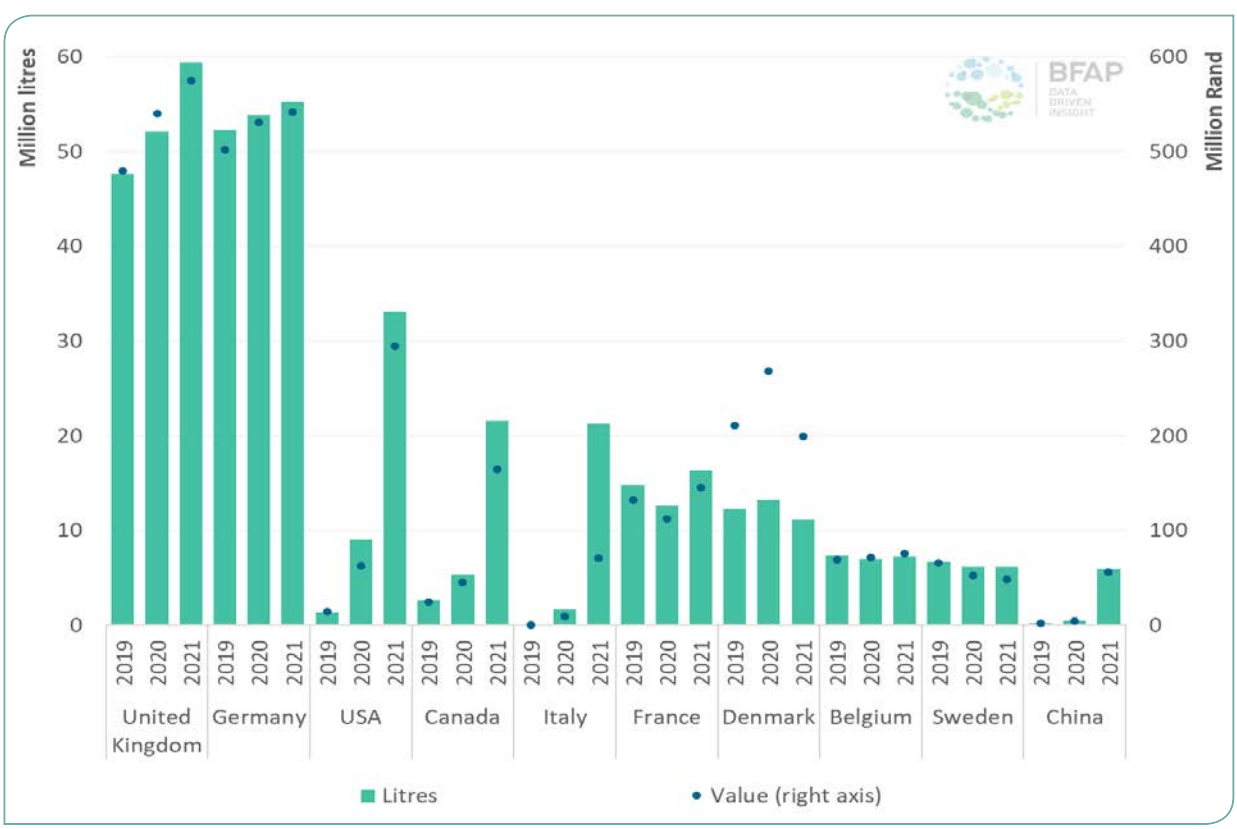


Figure 82: Bulk wine exports from South Africa to selected destinations in 2019-2021
Source: SAWIS, 2022

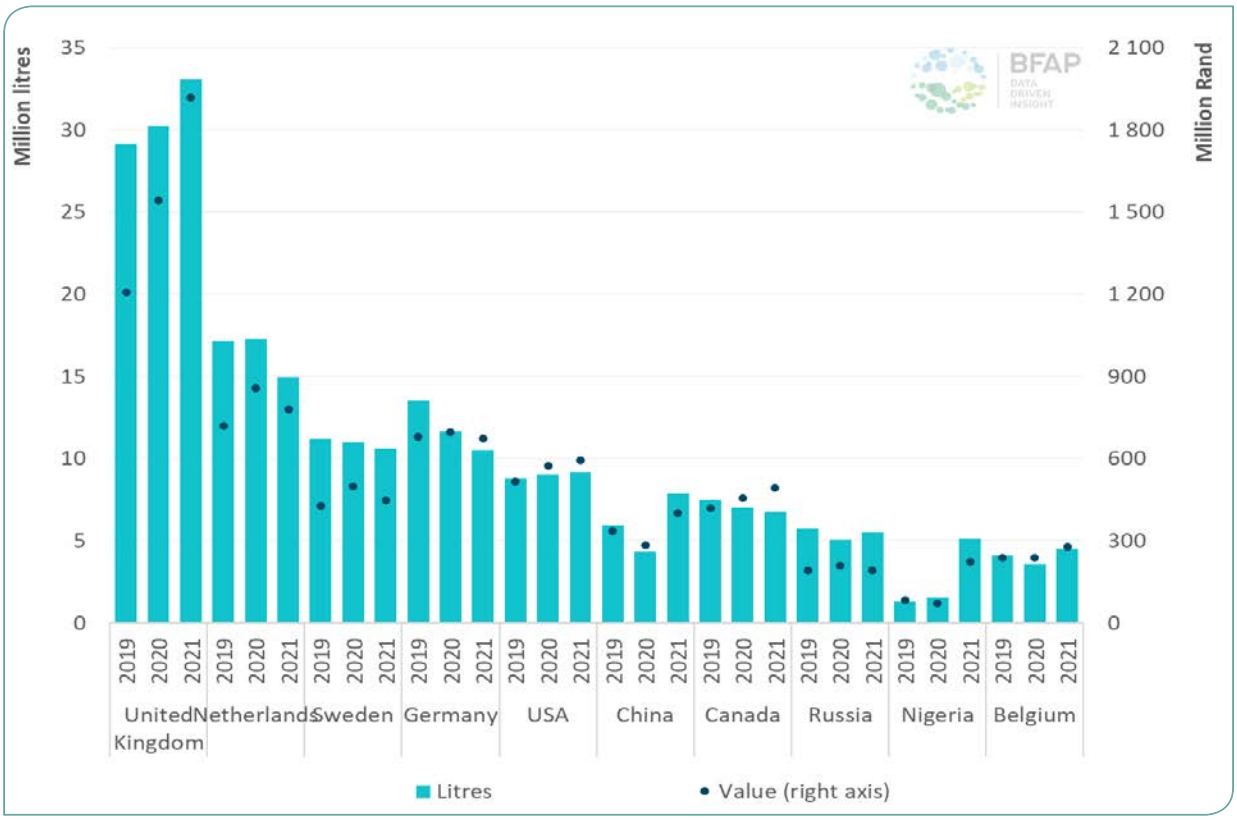


Figure 83: Packaged wine exports from South Africa to selected destinations in 2019-2021
Source: SAWIS, 2022

by 6.6%, with total value of exports growing by 9.2% year on year, negating a stronger Rand and finding opportunities to increase prices where demand exceeds supply. Nigeria, slotting in at number nine, is the first African country among the top 10.

Year to date bulk trade shows double digit growth compared to the same period in 2021, which is indicative of a continuation of the trend observed in 2021 to supply willing buyers with high volumes in order to reduce total stock levels in South Africa. Packaged exports, on the other hand, show a 2.0% increase compared to 2021, with the availability for general purpose containers and space for containers on ships playing a role. Thus, the variability observed in Figure 82 and the consistency in Figure 83 are likely to continue over the short to medium term within the current wine climate.

One of the biggest trends observed in Figure 84, is the projected shift away from North American countries towards the BRIC countries. China and Russia are two of the top 10 importers of packaged South African wine, with China rounding up the top 10 in bulk exports, based on 2021 volumes. Russia's invasion of Ukraine may affect trade in the short to medium term, depending on the duration of the war. However, with per capita consumption trending downwards in major wine drinking countries whilst population growth in those countries also remains stable, or, in some instances trends downwards, South Africa should look towards other markets to increase offtake. Over the course of the projection period, total wine exports are expected to grow on average by 1.1% per annum from 2021 to 2031. Whilst the UK and the EU remain the most prominent markets for South Africa, the relative share is projected to decline over the outlook, from 71% of exports in 2021 to 64% in 2031, although an additional 21 million litres are expected to feed into those markets by 2031.

PRODUCTION AND PRICES

Wine grape production in South Africa reflects a distinctly declining trend over the past decade, more so in terms of vine area than in grape production. This is particularly evident if one disregards the drought period of 2017-2019, from which the industry has recovered in terms of

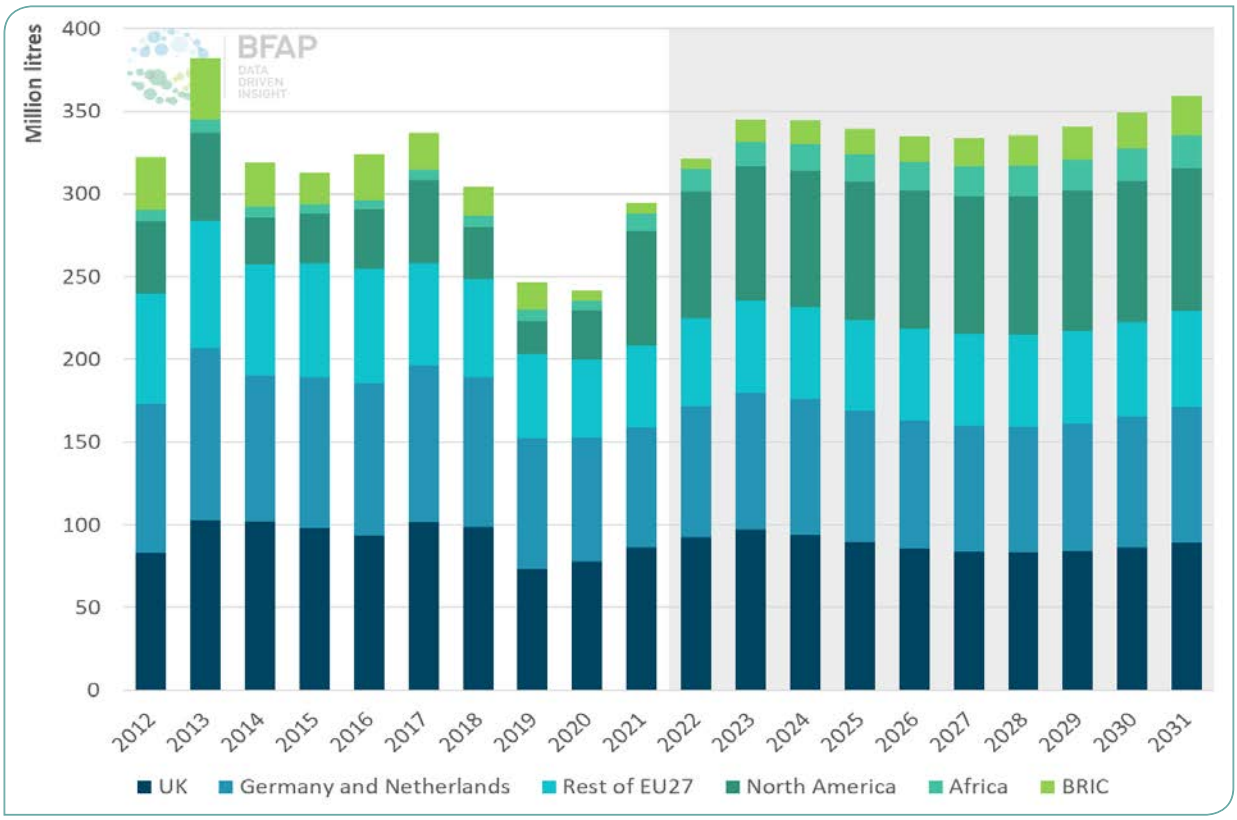


Figure 84: South African wine exports, disaggregated by region: 2012-2031
Source: SAWIS, 2022 & BFAP Projections

volume. After a particularly good production year in 2021 (1.46 million tonnes), indications of the recently concluded 2022 harvest was slightly more modest (1.38 million tonnes). As hectares are projected to continue trending downwards towards 2027, total production volumes are also expected to decline, albeit at a slower rate. Towards 2027, the turning point on area in Figure 85, just over 11 000 hectares are expected to be uprooted without being replaced – a decline of 12% from 2021. Grape production is expected to decline quite sharply in the next two seasons. Some area may be taken out of production without necessarily being uprooted, given the limited current revenue generating ability and high input prices. Some replacement of unproductive vineyards is expected to start contributing to additional output from 2025 onwards, stabilising production volume. Whilst cyclical and dependent on climatic conditions, wine production, on average, came to some 1.4 million tonnes per annum over the last ten years, whilst 38 million vines have been uprooted over the same period. Over the outlook, the harvest is expected to stabilise at an average of 1.3 million tonnes, before rising modestly in the latter years. The trend towards 2027, which sees total production volume declining at a slower pace than hectares uprooted, is therefore a continuation of the trends of the past decade. Higher yielding cultivars, changes in rootstocks and cultivar clones, as well as a greater emphasis on terroir are contributing to the phenomenon of lower relative decline in volume than area, and a sharper increase in volume than area post 2027.

Whilst total planted area is indicative of production potential, a deeper dive into the age distribution of vines reveals a more nuanced picture. In Figure 87 the total area, excluding sultanas, is categorised according to both colour and age brackets. For both white and red wine grapes, total area declined over the last decade, which aligns with the observations from Figure 85. Two distinct observations can be drawn from Figure 87, which is also important in supporting the projections on wine grape volumes in Figure 85. Firstly, a substantial shift in age brackets is visible for both white and red grape area, but it is more prominent on the red grape side. Older vines become less productive in volume over time, which is typically after 20 years, depending on the soil, climatic conditions and production practices. Thus, the same

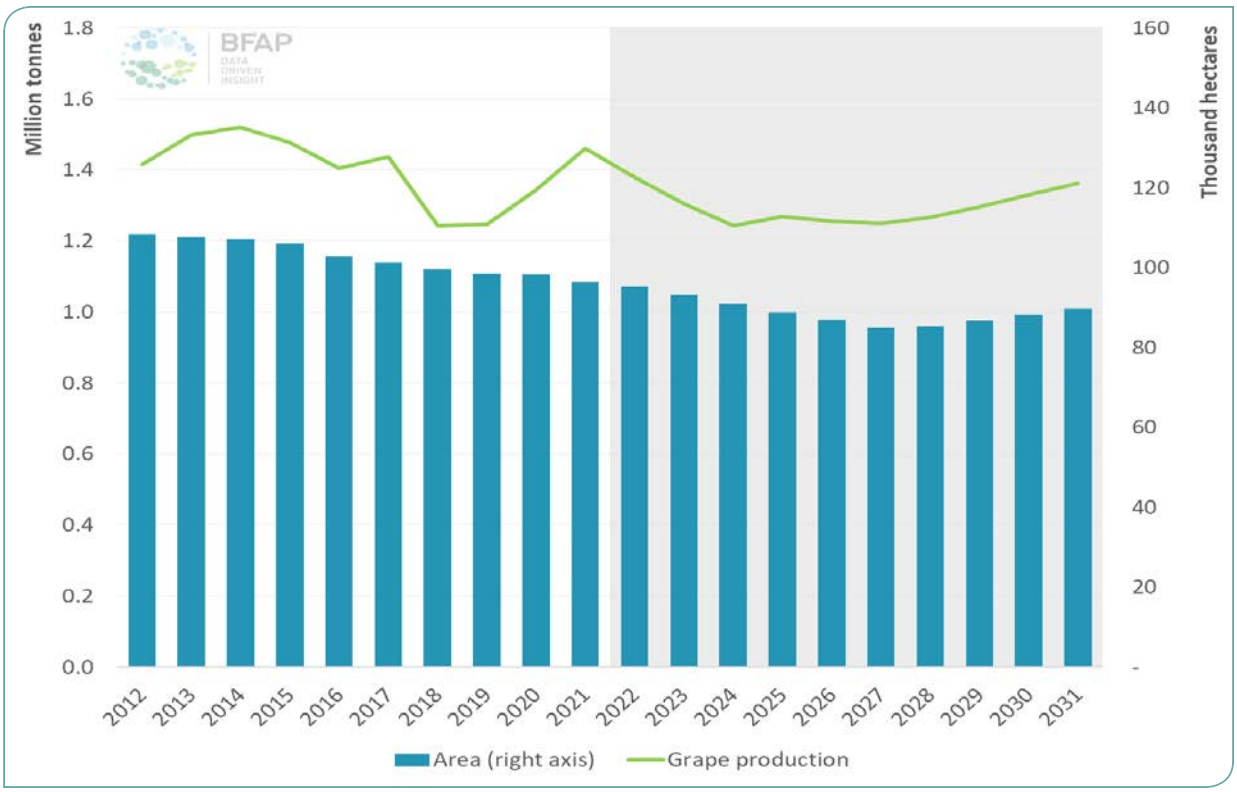


Figure 85: South African wine grape production: 2012-2031
Source: SAWIS, 2022 & BFAP Projections

production volumes cannot be expected despite a decline in area, as has been observed in the historic data provided in Figure 85. Secondly, low levels of investment in new plantings in both white and red grapes, measured by the '0-3 years' category, signifies little chance of changing the balance between older and younger vines over the medium term. In terms of white wine grapes, the '0-3 years' were 12% of total planted area in 2012, compared to the 10% of red wine grapes. Over the course of a decade, this share has declined to 9% and 8% respectively, whilst the quantum also declined by 10% in both colour categories over the same period, resulting in an even greater decline in the number of young vines in absolute terms. Note, however, that older vines can yield a higher value per vine and per hectare when they are properly tended to produce higher quality grapes and ultimately, wine.

In response to contracting supply, wine prices increased at above inflation levels in 2017, 2018 and 2019 (Figure 87), supported by an average annual growth rate in export prices of 8.3% over the same period. The strong supply rebound in 2021, a sharp, COVID-19 related increase in accumulated stocks, a stronger Rand and expansion in bulk exports resulted in a real year on year decline in wine prices. Considering the past year's bulk exports and the current trajectory for 2022 bulk exports, accumulated stock levels could start declining sooner than initially expected (Figure 88). Whilst in stark contrast to the longer term goal of 60% packaged exports and 40% bulk exports, the additional bulk exports in the short term should result in a quicker return to a pre-COVID-19 norm in terms of market balance.

As stock levels and production volumes are expected to decline over the outlook period, prices are projected to recover. In nominal terms, red wine prices are expected to surpass 2019 levels by 2024, whereas white wine prices rise faster surpassing 2019 levels by 2023. In real terms, red wine prices expected to surpass their 2020 level by 2029, using 2012 as the base year. White wine prices are expected to peak slightly earlier in real terms, with both red and white wine prices trending largely sideways over the medium to longer term.

Once stock levels starts to return to longer term, pre-COVID-19 levels, the increase in nominal prices, together with the farm level profitability challenges in some of the fruit industries could instigate a swing back towards wine grapes. As such the increase in total area and consequent increase in total wine grape production projected in

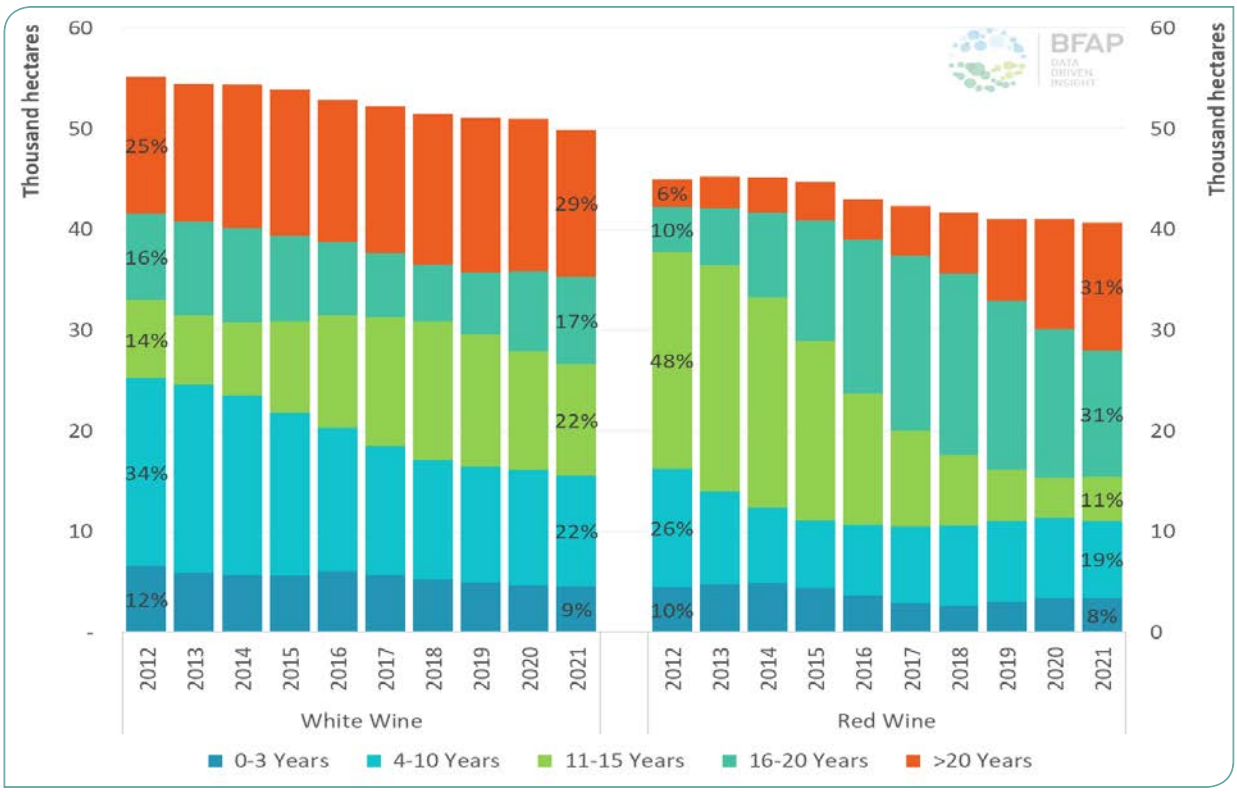


Figure 86: Age structure of South African vines

Source: SAWIS, 2022

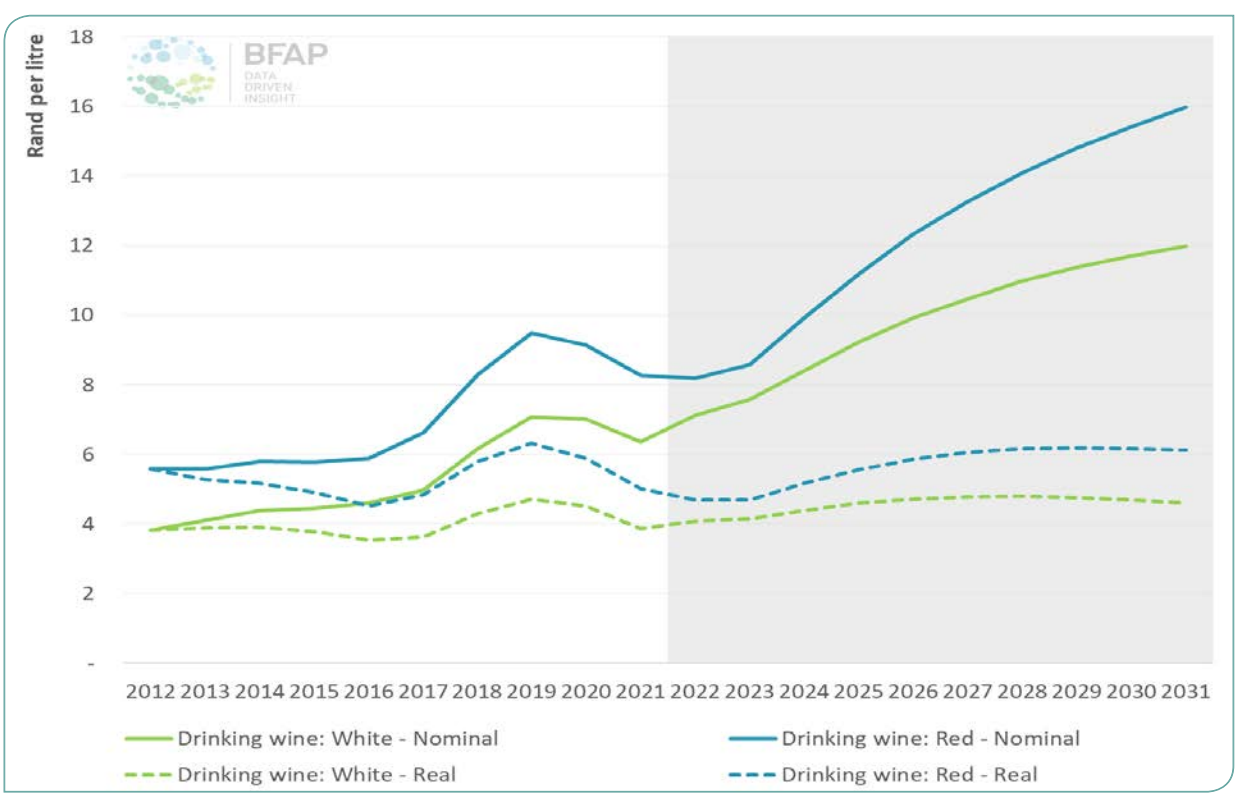


Figure 87: Historic and projected South African wine prices in nominal and real terms: 2012-2031

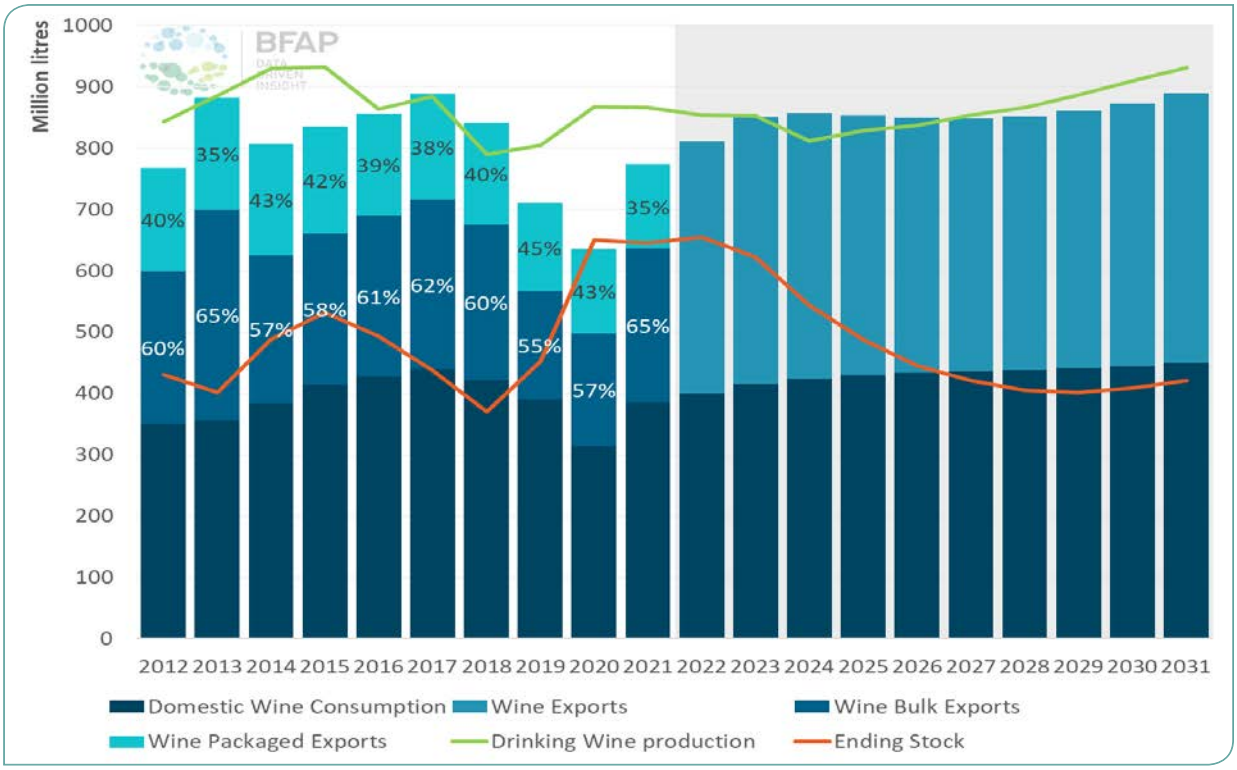


Figure 88: Production, consumption, trade and stock levels: 2012-2031

Figure 85 supports the projected increase in total local and export wine volumes in Figure 88.

CONCLUDING REMARKS

Although the industry is still dealing with the aftermath of stringent measures enforced to reduce the spread of the pandemic, current projections paint a more favourable picture than those immediately following the pandemic. With the global shipping crisis and surging freight rates the past two years, the role players within the wine industry had to double down on efforts to move product in order for the industry to recover.

From an international market perspective, trends in terms of total consumption and per capita consumption are important. With the most South African wines destined for the EU and UK markets, the downward trends in per capita consumption of wine in countries like France and Italy, are indicative of lower imports over the longer term. Whilst UK and German per capita consumption have moved within a small band over the last two decades, the pre-pandemic year-on-year decline from 2018 to 2019 was accelerated as a result of the pandemic, and consequently this could affect market space going forward.

Consideration of the top 10 export destinations for both bulk and packaged wine over the past three years revealed interesting trends. Packaged export destinations showed lower levels of variability than their bulk counterpart. Whilst significant increases in bulk exports to the US, Canada, Italy and China were observed, a return to normal logistics and normal stock levels could see these markets fading in future. In terms of packaged wine, with Nigeria breaking into the top 10, 2022 could be an important year to firmly establish a new market, or to rethink strategies to successfully sell good volumes of wine at remunerative prices into Africa.

Producers – often last in line to receive payment for the grapes that enable the wine value chain – are dependent on increases in wine prices to filter through the chain and induce higher grape prices. Given the significant cost of establishment and the long term nature thereof, the incentive and financial ability to make such decisions is paramount in sustaining the industry – at farm, cellar and tourism level. Input price pressure, together with current wine grape prices, are not creating a conducive environment for such strategic decisions and this is supported by the downward trajectory on area over the short to medium term, but the situation has the potential to recover over the medium to long term.

PROSPECTS FOR AGRO-PROCESSING




PROSPECTS FOR AGRO-PROCESSING

Moving beyond the farm-gate, this chapter considers the performance of agro-processing in the recent past. It is well-established that the financial well-being and performance of South Africa's agro-processors are largely tied to the performance of the local economy and to a lesser extent the export market. This is mainly the result of the county's dependence on importing a number of critical final manufactured goods in which our competitiveness is lacking. The combination of factors such as the post-Covid economic environment coupled with impacts of the Russian invasion of Ukraine is expected to place significant pressure on agro processing margins. With major commodity prices trending substantially higher, the world-wide problem of containing inflation will be of critical importance for the manufacturing industry. With the local economy under strain for a number of years, it is unlikely that the purchasing power of individuals will be able to absorb the increases in food and beverage prices. At the time of writing, two of South Africa's largest food processors have signalled to the market that significant price increases will inevitably be shifted to consumers in the second half of 2022. Thus, two immediate factors will affect margins in agro-processing industries. First, the ability of South African monetary and fiscal policy to deal with the dual challenge of high inflation amid a low growth outlook and second, how the global situation unfolds with geo-political events related largely to the war in Ukraine.

In order to anticipate what the future might hold for agro-processors in South Africa, we start with a brief overview of the past performance per industry in terms of turnover, followed by the employment trends. We then proceed with some interesting insights from a particular agro-processing industry, namely feed manufacturing, based on a recent deep-dive analysis as commissioned by the South African Feed Manufacturers Association.

AGRO-PROCESSING PERFORMANCE

Figure 89 shows the real sales trends on a quarter on quarter annualised basis, with the bars disaggregating the contribution of each category of agro-processing. The dotted line provides the trend for volumes sold for the industries combined to gage whether sales growth was driven by price or volume changes. It is clear that the agro-processing sector realised substantial growth between 2010 and 2013, after recovering from the global recession in 2009. The average GDP growth for the South African economy during this period was around 3%, but subsequently slowed to reach 0.1% in 2019. Two factors

that resulted in a large contraction in sales, especially in grains and meat production, were the 2015/16 drought in the summer rainfall regions and the impact of animal disease outbreaks from 2016 onwards. The onset of Covid-19 in 2020 brought many manufacturing activities to an almost complete standstill, but they then rebounded in what is akin to a mirror-image positive recovery. The largest impacts on sales and volume produced were in the beverages industries due to the lock-down measures restricting sales of alcohol. At the start of 2022 most of the Covid-19 induced impacts are something of the past, yet some agro-processing sectors have seen a significant decline in the past two quarters, mainly in "other" food processing and dairy.

Table 11 provides the actual real sales values and growth rates for the food and beverage industries between 2019 and 2021. In 2021 food and beverage manufacturing made up around 25% of total manufacturing sales, whilst the meat, fish, fruit and oils subsectors made the largest contribution to agro-processing at around 29%. The annual decline between 2019 and 2020 shows that the impact of Covid-19 resulted in a 0.27% decline in real sales, whereas the entire manufacturing sector saw a much larger contraction of 10.25%.

The resilience of agro-processors during Covid-19 compared to other manufacturing sectors also translated into minimal job losses in 2021. Total employment in agro-processing has stabilised at around 258 000, whilst employment in the rest of the manufacturing sector declined by around 70 000 in 2020, while only around 30 000 were recovered by 2021. The "Other" food processing category, which includes products such as potato chips, nutritional supplements, baby foods and herbs and spices etc, contributed the largest share in employment with 40% of all agro processing jobs, with meat, fish, fruit and oils in second place with 23% of the total.

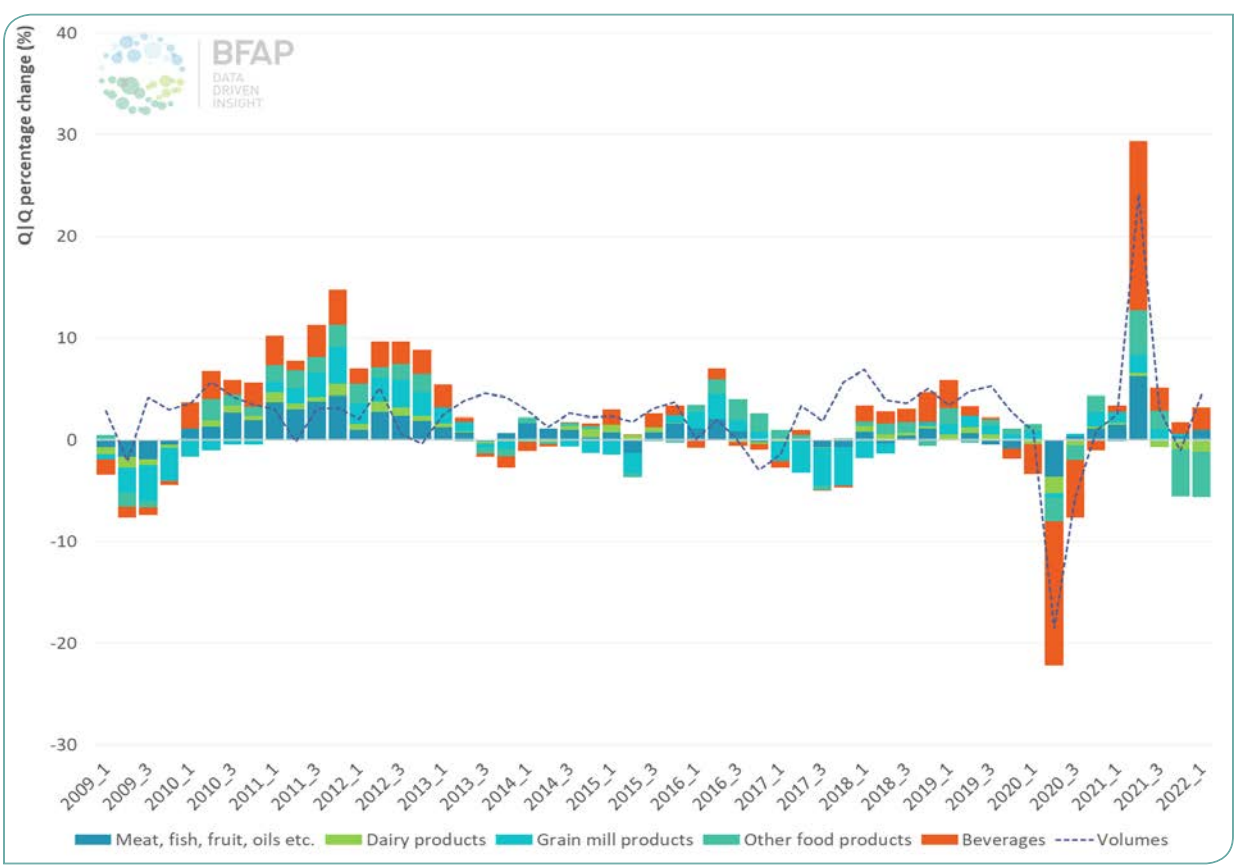


Figure 89: South African food & beverage manufacturing performance
Source: Stats SA (2022)

Table 11: Agro-processing sales performance 2019-2021

Industry	Real Sales R (million)				Sales Growth (%)	
	2019	2020	2021	Share (%)	2019-2020	2020-2021
Meat, fish, fruit, oils etc.	12 962	13 638	15 255	29	5.21	11.86
Dairy products	4 351	4 377	4 445	8	0.58	1.56
Grain mill products	6 782	7 540	8 437	16	11.18	11.91
Other food products	9 791	10 306	10 871	21	5.26	5.48
Beverages	13 086	10 984	13 906	26	-16.06	26.60
Total: Food and beverages	46 973	46 845	52 914	100	-0.27	12.96
Total Manufacturing	201 995	181 284	211 216	25	-10.25	16.51

Source: (StatsSA, 2022)

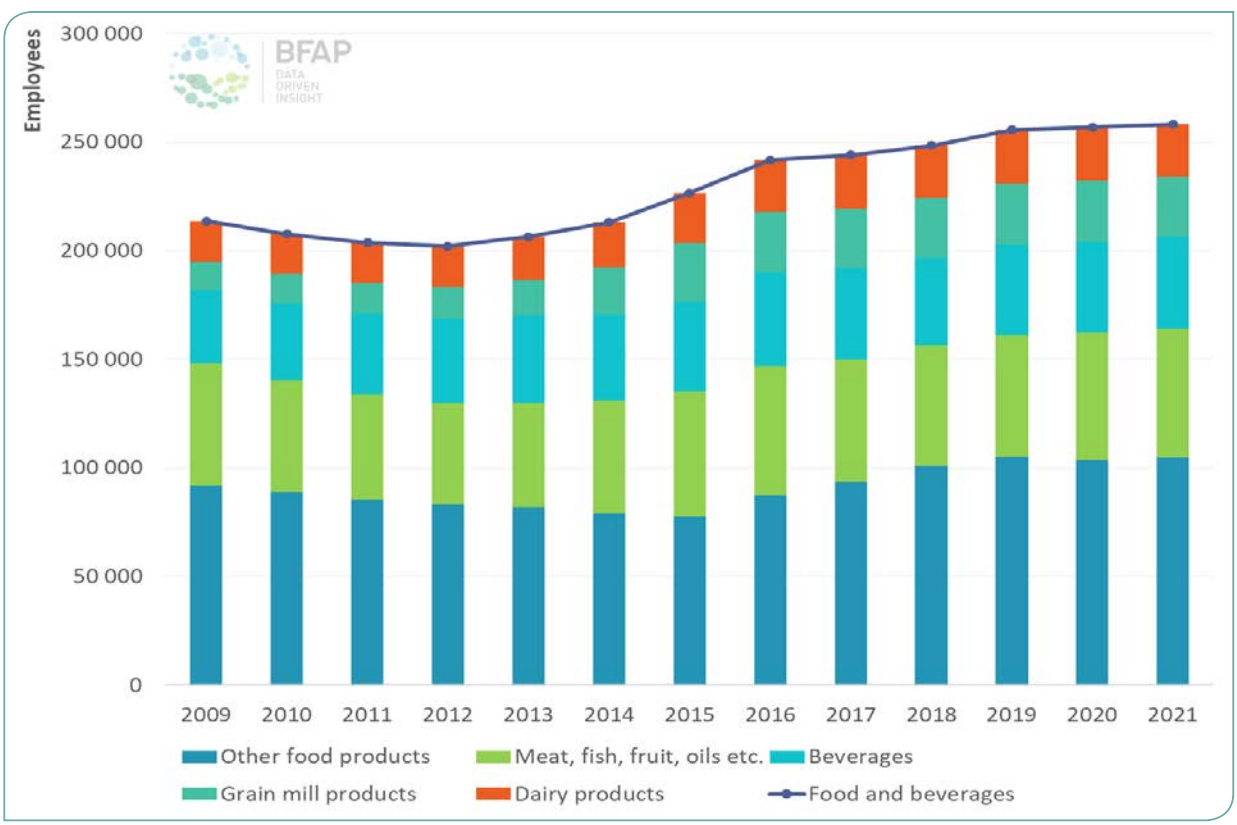


Figure 90: Employment trends in South African food & beverage manufacturing
Source: Stats SA (2022)

THE SOUTH AFRICAN FEED INDUSTRY

The animal feed industry is a critical role player in South Africa's agricultural economy, providing nutritious feed inputs to animal farming, whilst at the same time being a major buyer of raw materials from farms (grains & oilseeds) and other manufacturing (oilcake, grain milling residues and other raw materials) industries. The history of the industry dates back more than 80 years and was established primarily to deal with periods of drought and the devastating impacts of the Great Depression. The industry has subsequently grown in response to the increased importance of nutrition in more intensive livestock farming operations.

Animal feed production has become an essential economic activity globally as the demand for animal products is increasing with population and income

growth, as well as urbanisation. Rapid growth in per capita income in developing countries is driving increased meat consumption, which in turn leads to strong growth in feed consumption of cereals such as maize, and oilseeds. The production of a variety of quality feeds, high in nutritional value and specifically tailored to the needs of different animals has become the foundation for sustained global livestock productivity and a critical driver of competitiveness. It is also no surprise that animal feed is often the biggest expenditure item in livestock systems, as is the case in South Africa. Furthermore, the impending impact of increased climate variability and more frequent droughts suggests that animal feeds optimisation will be critical for future growth and sustainable economic development.

Figure 91 provides a birds-eye view of the major producing countries on the left and the breakdown of feed utilisation by livestock species on the right. The USA and China are global leaders in producing feed, with these two countries producing around 34% of global output. Brazil, Russia and India follow, whilst South Africa produces around 1% of the total – roughly in line with its contribution to livestock production globally. Broiler, pigs and layers consumed more than 69% of global manufactured feed.

South Africa's animal feed industry has a unique role in various agricultural and agro-processing sub sectors. Not only is the industry both a major buyer of raw agricultural and agro-processed products, but it is also a critical input supplier to animal farming in South Africa, providing animals with adequate, balanced diets, free of toxins and contaminants which is essential to promote productivity and animal welfare. Feed mill profitability is highly dependent on competitive sourcing or raw materials and requires high utilisation rates of manufacturing capacity in a market with thin margins. Figure 92 illustrates the interconnectedness of animal feed manufacturing within the South African economy.

The animal feed mills source various raw materials from both the primary agricultural sector and residual products from other agro-processing firms. The major products that come directly from agriculture include maize (mostly yellow), oilseeds and other grains and dry materials such as hay. Agro-processing products used as an input to produce animal feed come from oil crushing (oilcake), grain milling (various meals, flour, germ and hulls), sugar processing (molasses & bagasse) and from meat processing (animal & fish meal). Additional value chain linkages not specifically shown in Figure 92 include sourcing products from mining (limestone & phosphates) and chemical manufacturing (vitamins & medicine).

These raw materials are then used in a process whereby prepared animal feed is tailored for specific output markets, mainly poultry, dairy, beef, sheep and pigs. Thus, the animal feed industry produces products used in the farming of animals and animal products, which in turn has secondary feedbacks affecting secondary agro-processing

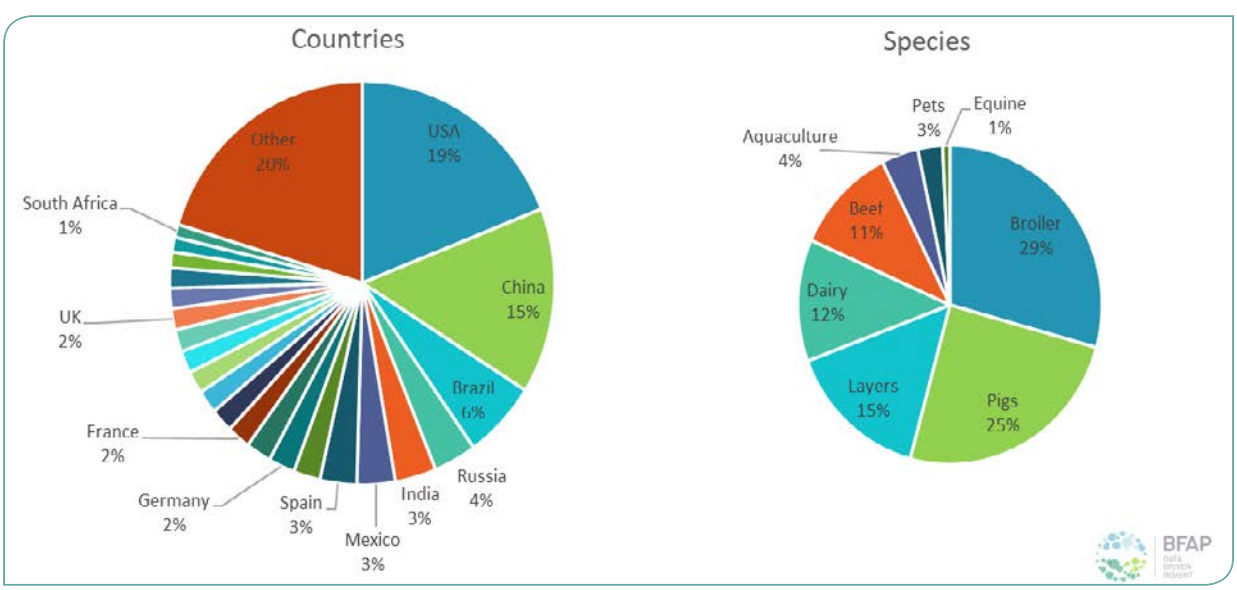


Figure 91: World feed manufacturing by country
Source: Alltech (2021)

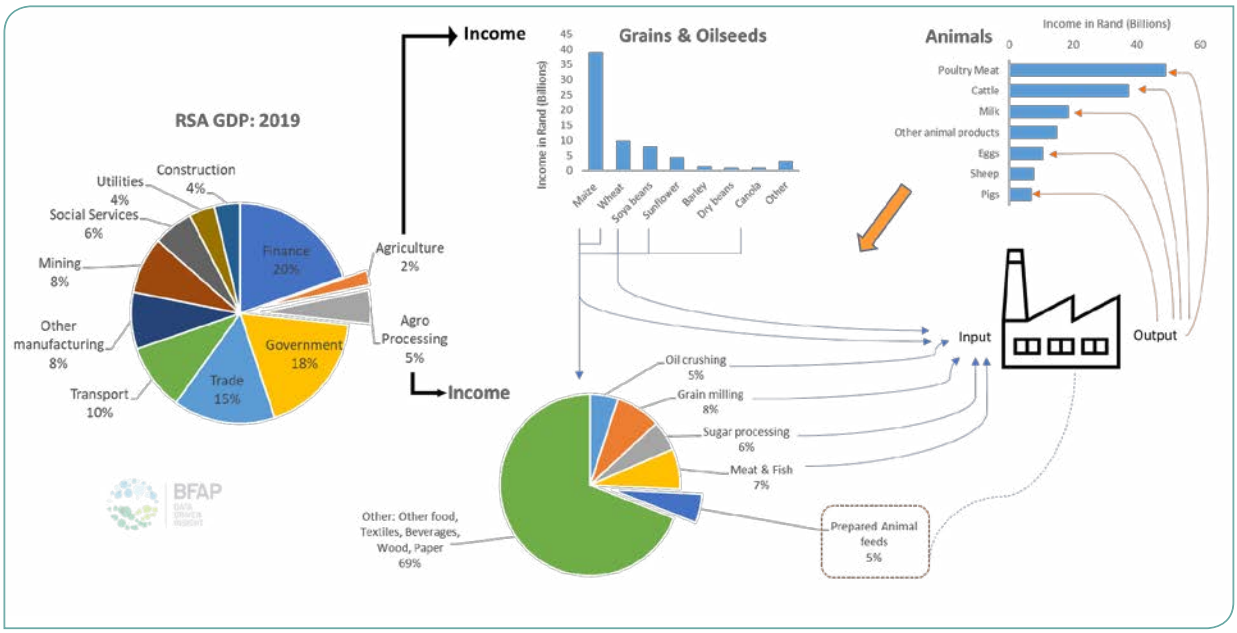


Figure 92: Animal feed linkages to the rest of the economy
Source: StatsSA, 2021; StatsSA, 2017; DALRRD, 2020

Table 12: Total feed production in South Africa in 2020

Segment	Volume in Tons	Percentage of Total
Manufactured balanced farm feeds	6 732 571	51.67
Feedlot and on-farm mixed farm feed	5 240 821	40.22
Pet feed (2017)	187 628	1.44
Informal feeds	868 746	6.67
Total	13 029 766	100.00

Source: AFMA, 2021; PRF, 2021; StatsSA, 2019

firms such as abattoirs, milk processing facilities and tanneries.

Figure 92 only includes animal feed manufactured in dedicated feed facilities, while Table 12 provides an estimate of the size of all feed produced in South Africa. South Africa produced around 13 million tons of feed in 2020, with the manufacturing of balanced feeds accounting for 52% of the total. A further 5.2 million tons are feed mixes produced and utilised in feedlots and other on-farm activities, whilst it seems likely that a fairly large proportion (7%) is produced in the informal feed market.

The performance of the feed manufacturing segment is presented in Figure 93. Since animal feed is aggregated in the official data, we show the overall trends for grain milling, but indicate a share of the total for animal feeds compared to food milling. It is clear that animal feed production has grown faster than that of food milling, since it's share has increased from around 30% in the early 1990's to around 44% in 2017. The growth in output volumes between 2000 and 2014 coincides with strong consumption growth in South Africa's poultry meat industry.

The economic contribution of animal feed manufacturing was estimated at around R55 billion in gross sales in 2020, with some 17 000 employment opportunities. Factors such as international trade in oilcake, spatial considerations of production of raw materials and its transport, as well as demand from livestock industries determine the ongoing success of feed manufacturers. A positive story for South

Africa is the ongoing replacement of locally produced soybean oilcake used by feed mills and the important contribution these mills are making in buying and selling into agricultural value chains. Thus, the continued growth in this industry is directly tied to the success of both grain and oilseed farming, as well as strong growth in intensive livestock industries.

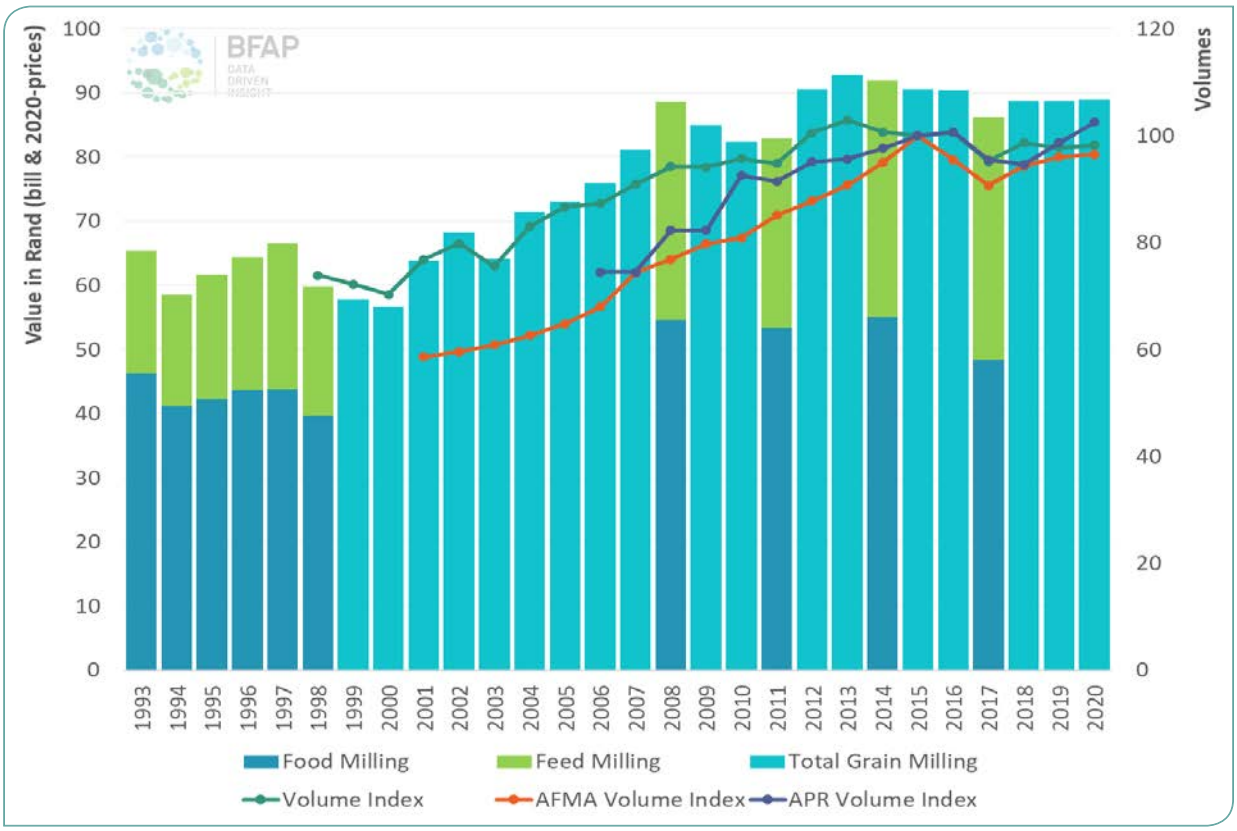


Figure 93: Feed mill performance in gross sale and volumes, 1993-2020
Source: StatsSA, 2021; 1993-2021

FOOD INFLATION IN 2022 AND BEYOND

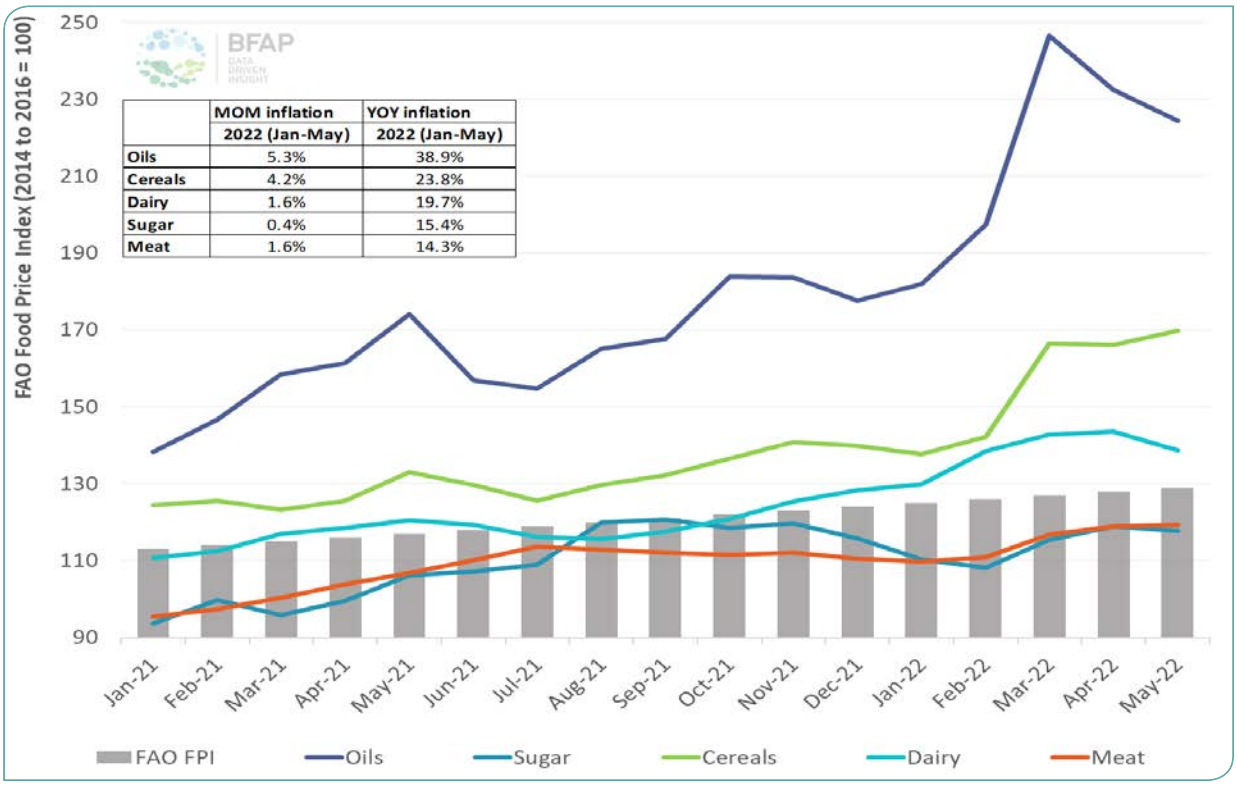
Over the past year, high and rising food price inflation has been a global reality. This chapter considers food inflation and affordability in the South African context, with specific attention to:

- International food inflation trends and drivers;
- South African trends and projections in food inflation;
- A comparison of CPI-based food inflation with inflation on basic healthy eating as measured by the BFAP Thrifty Healthy Food Basket (THFB);
- The affordability of the THFB;
- Consumer level impact of projected food price dynamics.

FOOD INFLATION - A PAST PERSPECTIVE

The FAO Food Price Index (FPI) is a measure of global changes in agricultural commodity prices. In March 2022 the index reached a new all-time high, with particularly high inflation observed in the oils and cereals categories. Over the past few months, major drivers of food inflation internationally include the Russian invasion of Ukraine, China's no-Covid policy and the associated lockdown restrictions, dry conditions in key agricultural production regions, and trade restrictions on key food and agricultural commodities due to rising inflation. The impact of the Russian invasion of Ukraine was particularly severe, as food commodity, agricultural input, and energy supply was disrupted, which all add to global inflationary pressures. In China, harsh lockdowns have and will continue to disrupt manufacturing and global logistics systems. Examples of export bans of certain commodities by key production regions include a palm oil export ban by Indonesia (which has since been lifted) and a wheat export ban by India. Poor weather conditions that delayed planting in the US also affected sentiment regarding the forthcoming crop which, in turn, drives prices upward.

In South Africa specifically, year-on-year food inflation was recorded at 7.6% in May 2022, whilst month on month inflation edged up further by 0.6%. This was predominantly driven by the global factors already highlighted, which are apparent in high local grain and oilseed prices. In the case of meat, it also relates to short supply, which has driven prices higher despite increasing pressure on consumers' disposable incomes. From January through May 2022, slaughter numbers were down by around 3.6% compared to the same time in 2021, when volumes were already below normal. This is underpinned by high grain prices, which are constraining supply in the red meat value chain, as well as ongoing herd rebuilding in the west of the country, where dry conditions up until 2019 have since abated. Poultry prices, in turn, are also on an increasing trend as a result of high global prices, a weaker exchange rate and tariff protection.



	MOM inflation 2022 (Jan-May)	YOY inflation 2022 (Jan-May)
Oils	5.3%	38.9%
Cereals	4.2%	23.8%
Dairy	1.6%	19.7%
Sugar	0.4%	15.4%
Meat	1.6%	14.3%

Figure 94: International view on food inflation: The FAO Food Price Index (January 2021 to May 2022)
Source: FAO Food Price Index, 2022

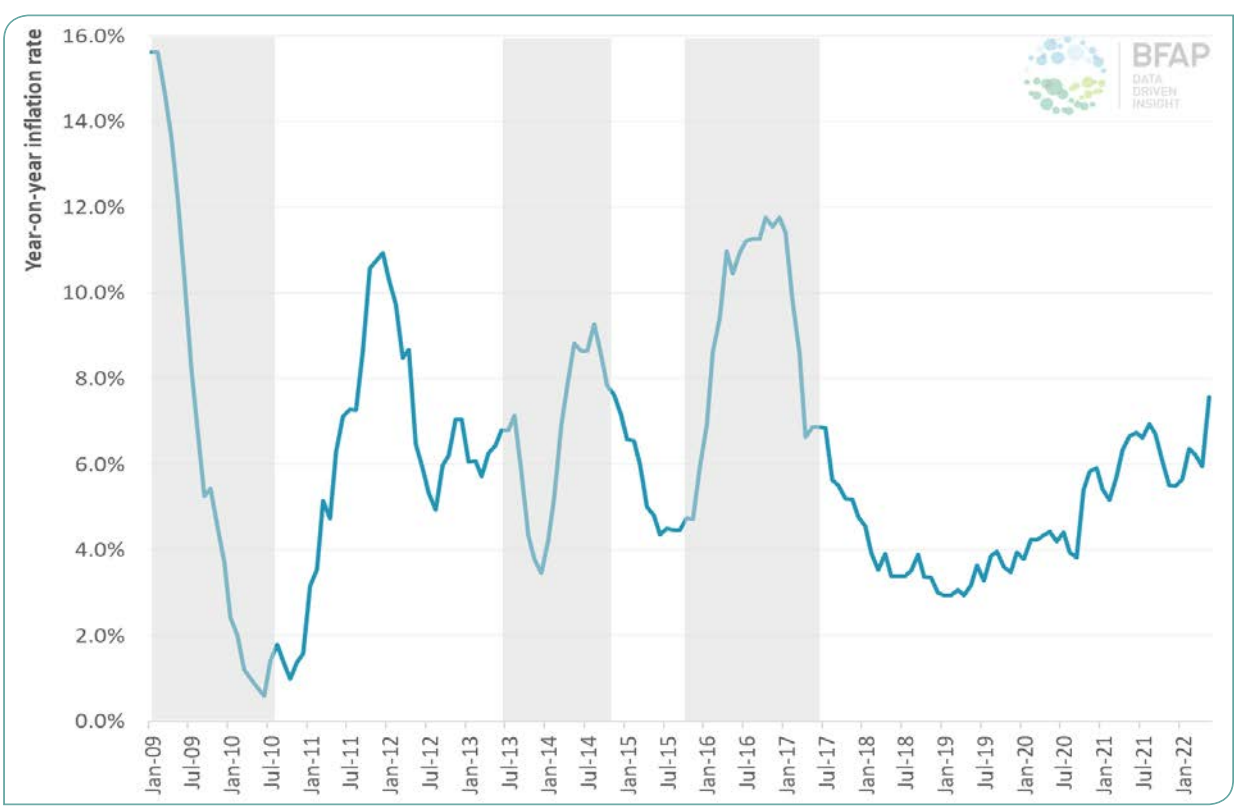


Figure 95: South African inflation in food and non-alcoholic beverages – January 2009 to May 2022

PROJECTIONS IN FOOD INFLATION FOR SOUTH AFRICA

In previous versions of the BFAP baseline, food inflation projections were based on the time series properties of the South African food inflation data series, which were used to project 18 months into the future. This method is well suited for times with 'well behaved' inflation, where food inflation continues on an apparent trend through time, such as in the period Jan 2018 to Aug 2021 (Figure 95). However, the projections generated with this method perform poorly in times of notable supply shocks, such as for example the local drought in 2015/16 and the global financial crisis ending in 2009 (see grey blocks in Figure 95). Within this context, the compound effect of the various supply disruptions around the globe already mentioned, have prompted a revisit of the time series approach, as there are multiple plausible inflationary paths that can occur over the next 18 months. We therefore consider three plausible scenarios centred around grain prices, but also including livestock and meat prices due to the prominence of these two categories in the South African CPI food basket. The combined expenditure weight of these two categories amount to 52% in the CPI food basket.

Scenario 1: South African food inflation remains firm as global grain supply shocks persist

It is assumed that global and local grain prices remain firm during 2022 due to below average production in the Northern hemisphere and Ukrainian supply largely missing from markets. As a result, low local red meat supply persists, and prices stay at or close to current elevated levels. This supports demand for more affordable meat protein options like chicken, which, in turn, also results in chicken product prices remaining firm over the coming 6 months. Subsequently, in 2023, a favourable supply response from key Southern hemisphere producers drives grain prices down, which also permits increased supply in red meat production. Meat product prices therefore also show a modest downward trend. Considering the high base of 2022 and commodity prices trending lower, low levels of inflation in local food supply chains are sustained by increases in administered costs, a depreciating exchange rate and firm global energy prices.

Table 13: Projected inflation under Scenario 1

	Bread and Cereal Inflation Scenario 1	Meat Inflation Scenario 1	Projected Food Inflation Scenario 1
Average 2022	6%	10%	6.5%
Average 2023	1.5%	3%	3.7%

Scenario 2: Inflation moderates into 2023

For this scenario, it is assumed that over the next 6 months, global and local grain prices ease moderately due to favourable production conditions in the US, which, in turn, allows for some expansion in global supply. This creates a modest downward price trend in grains which also decreases the cost pressure in livestock value chains. As a result, local meat prices follow a modest downward trajectory as well. During 2023, additional growth in global grain production drives grain prices down further but the drag on inflation is less pronounced due to lower base effects from 2022, compared to scenario 1. As with the first scenario, modest inflationary pressures in food value chains persist due to increases in administered prices, exchange rate depreciation and firm global energy costs.

Scenario 3: Global supply responds to drive prices down significantly

For this last scenario, global and local grain prices ease due to favourable global production and the availability of grain stocks from Ukraine and Russia. Red meat

Table 14: Projected inflation under Scenario 2

	Bread and Cereal Inflation Scenario 2	Meat Inflation Scenario 2	Projected Food Inflation Scenario 2
Average 2022	4.5%	7.5%	5.5%
Average 2023	2%	3.3%	3.5%

Table 15: Projected inflation under Scenario 3

	Bread and Cereal Inflation Scenario 3	Meat Inflation Scenario 3	Projected Food Inflation Scenario 3
Average 2022	3%	6%	5.0%
Average 2023	1.5%	2.8%	3.0%

production expands significantly because of lower feed prices and herd rebuilding initiatives over the past years that start reaching the market. Red meat prices follow a more dramatic downward trajectory, compared to scenario 2, to reach levels corresponding to mid-2021.

THE COST AND AFFORDABILITY OF BASIC HEALTHY EATING IN SOUTH AFRICA

The BFAP Thrifty Healthy Food Basket (THFB)[11] measures the monthly cost of basic healthy eating for a South African reference household consisting of 2 adults and 2 children. Thus, this basket gives an indication of the typical cost of obtaining a basic healthy food selection with enough daily energy and adequate nutritional diversity. The 'maize meal only' food basket for the reference family of four estimates the monthly cost of obtaining the total monthly energy requirements of the household from only one food source – the most affordable starch-rich staple food in South Africa. Thus, this basket gives an indication of the absolute minimum cost of obtaining enough daily energy, even though nutritional diversity is obviously severely lacking for such a hypothetical diet.

Figure 96 shows historical and projected costs of the BFAP 'maize meal only' basket and THFB (2020 to 2023). From 2020 to the first quarter (Q1) of 2022 the cost of the BFAP THFB increased by R298, rising by 5.5% from 2020 to 2021 and a further 4.9% from 2021 to Q1 of 2022. Over this period the BFAP THFB was on average 297% or R2 290 more expensive than the 'maize meal only' food basket, stressing the significant cost difference between minimum adequate energy intake and a basic balanced food basket in the South African context.

In scenario 1 above, where food inflation is the highest among the 3 scenarios presented, expectations are that the cost of the BFAP THFB could increase to R3 246 in 2023, reflecting an increase of 7.4% year on year in 2022 and a further 3.1% year-on-year in 2023. Under scenario 3, which represents the lowest food inflation scenario amongst the 3, expectations are that the cost of the BFAP THFB could increase to R3 158 towards 2023, reflecting an increase of 4.9% year on year in 2022 and a further 2.7% in 2023.

CPI-BASED FOOD INFLATION VS. INFLATION ON BASIC HEALTHY EATING

Figure 97 compares the cost of the CPI index for food and non-alcoholic beverages (NAB) to inflation on the BFAP THFB, as a measure of the cost of basic healthy eating for the period January 2014 to May 2022. The composition of the CPI index for food & NAB (reflecting 'typical' South African food expenditure patterns) differs from the typical composition of the BFAP THFB (reflecting basic 'ideal healthy' South African food expenditure) in terms of both the food items included as well as the relative weights of food categories. Higher inflation on the cost of healthy eating compared to CPI food inflation is often attributed to high inflation on foods contributing to dietary diversity, with a higher relative weighting contribution to the THFB such as dairy, fats/oils, fruit, vegetables and legumes.

[11] In 2015 BFAP identified the need to develop an approach to measure the cost of healthy (nutritionally balanced) eating in the South African context – thus enabling the comparison of consumers' actual and 'more ideal' food expenditure patterns and associated inflation. The methodology takes into consideration national nutrition guidelines, typical food intake patterns of lower-income households, official Stats SA food retail prices and typical household demographics. Consisting of a nutritionally balanced combination of 26 food items from all the food groups, the BFAP THFB is designed to feed a references family of four (consisting of an adult male, an adult female, an older child and a younger child) for a month. For more detail on the THFB methodology please refer to the 2015 edition of the BFAP Outlook.

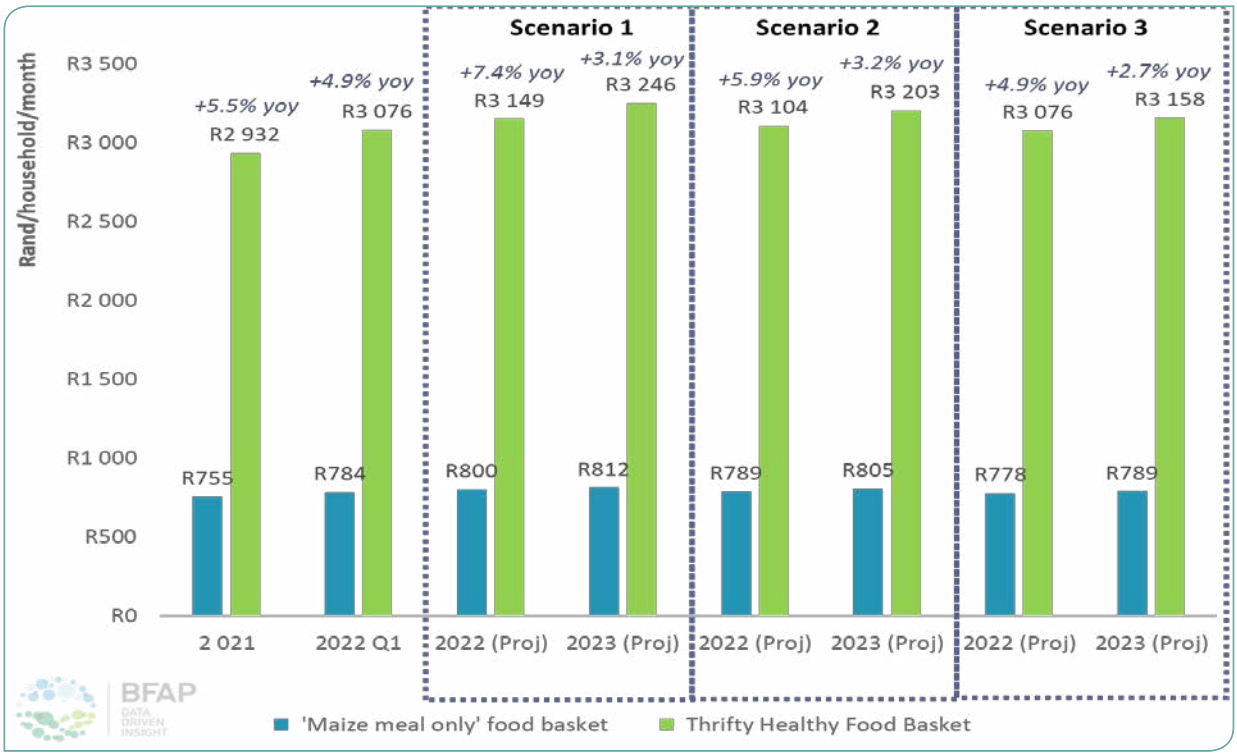


Figure 96: Historical and projected costs of the BFAP 'maize meal only' basket and the THFB from 2021 to 2023

Source: BFAP calculations

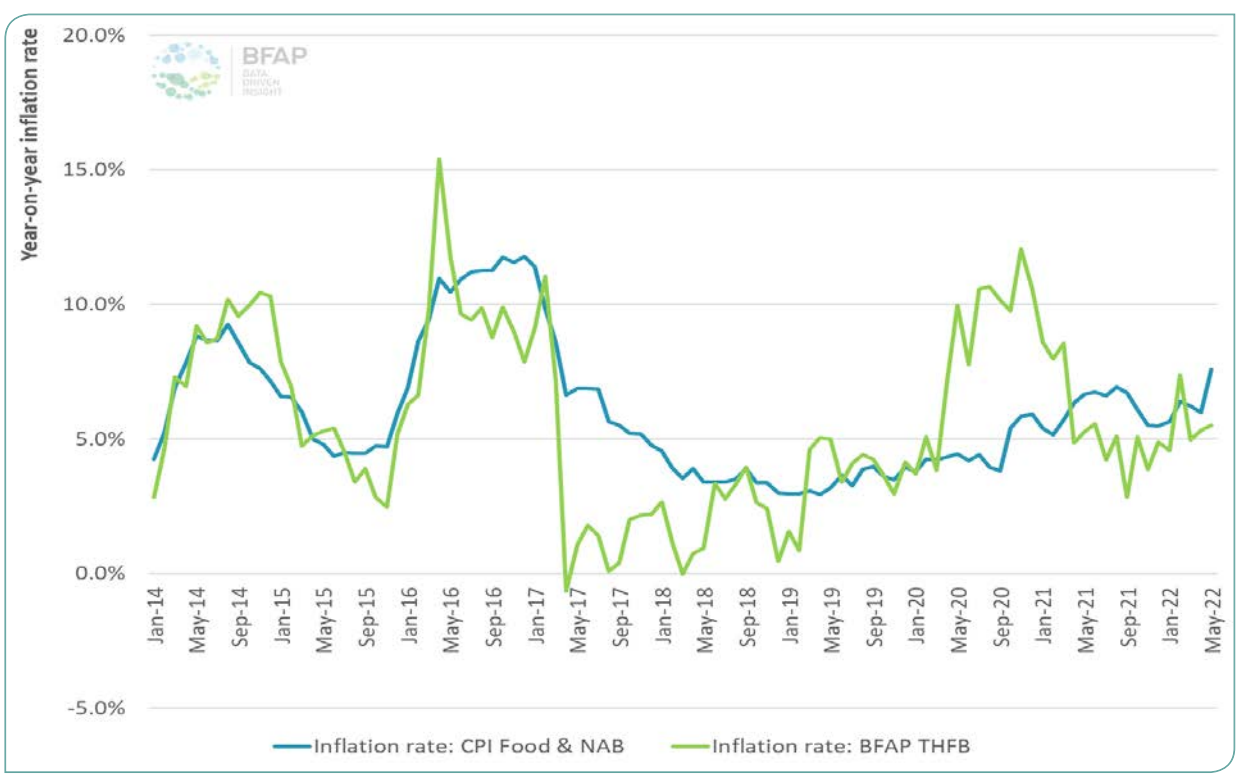


Figure 97: A comparison of inflation on the BFAP Thrifty Healthy Food Basket and inflation based on the CPI for food and non-alcoholic beverages from January 2014 to May 2022

Source: BFAP calculations & Stats SA CPI data for all urban areas

THFB INFLATION LOWER THAN CPI INFLATION:

Applied to 59% of the 101 months considered, thus more commonly observed

MOST RECENT PERIOD OBSERVED:
April 2021 - May 2022
(except for Feb 2022)

THFB INFLATION HIGHER THAN CPI INFLATION:

Applied to 41% of the 101 months considered, thus less commonly observed

MOST RECENT PERIOD OBSERVED:
July 2019 - March 2021
(except for Nov 2019, Jan & March 2020)

AFFORDABILITY OF THE FOOD BASKETS IN 2022

Affordability measures are based on assumptions about households incomes. In this regard, the THFB assumes a household earning one or two full-time minimum wages, receiving two child support grants and children benefitting from a school feeding program.

In 2022 the 'maize meal only' basket could absorb up to 16% (single wage income) and up to 9% (dual wage income) of the income of the typical household, and is thus affordable within the context of typical food expenditure shares shown in Figure 98. However, keep in mind that such a hypothetical diet will not be nutritionally adequate, despite providing the energy needs of the reference household.

A four-member household with only one wage earner will however not be able to afford the BFAP THFB, as the basket could absorb up to 54% of household income, significantly higher than the typical 32% food expenditure share of the least affluent households in South Africa. A household with two wage earners could spend up to 30% of income on food, falling within the food expenditure share range of the 40% least affluent households in the country. However, in the case of additional shocks, such as income loss, rising food prices or rising fuel costs, these households could rapidly move into a space where their food expenditure share could increase above typical levels and become unaffordable. Within the socio-economic spectrum in South Africa, (Figure 99) approximately half of the South African population cannot afford basic healthy eating.

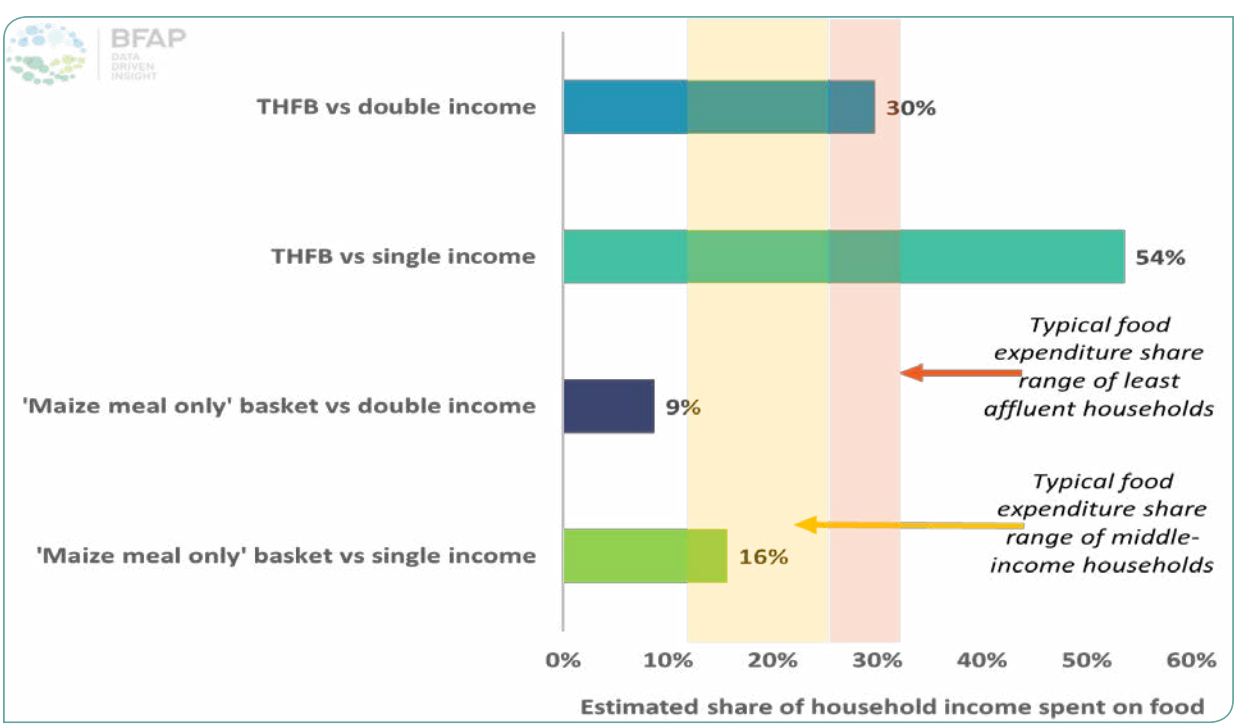


Figure 98: Affordability of the 'maize meal only' and THFB in 2022
Source BFAP calculations; Food expenditure shares: Stats SA LCS 2014/2015

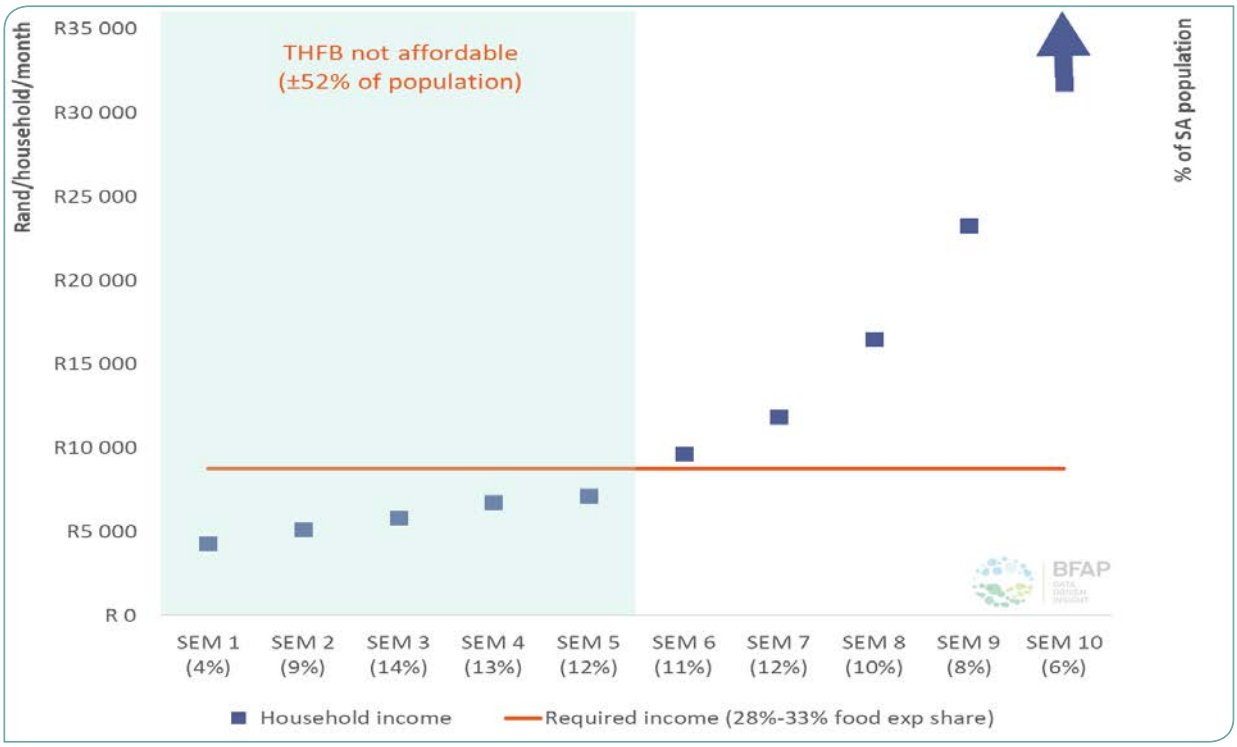


Figure 99: Affordability of the THFB within the socio-economic spectrum in South Africa (2022 estimates)

Sources: BFAP calculations: SEM distribution and income levels from the Marketing All Product Survey of the Marketing Research Foundation (2021)

CLIMATE CHANGE IMPACTS: MITIGATION AND ADAPTATION REQUIREMENTS FOR THE SOUTH AFRICAN AGRICULTURAL SECTOR

GLOBAL POSITION AND COMMITMENTS TO CLIMATE CHANGE

Climate change is affecting every country on every continent. It is disrupting national economies and affecting lives. Weather patterns are changing, sea levels are rising, and weather events are becoming more extreme. The scientific evidence of climate change and the role of human activities in this phenomenon is becoming increasingly indisputable.

The increase in average temperature that characterises climate change, considered alongside changing rainfall patterns, is likely to shift optimum growing areas for key crops, and generate an increase in the frequency and severity of extreme weather events. These challenges are superimposed upon the many other stressors that the food system already faces due to environmental degradation, disease outbreaks, and higher input costs, which are themselves compounded by political failure, issues of land rights, and inequality. In recent years, many countries around the world have responded to external shocks such as droughts, war and COVID-19 related restrictions by imposing discretionary protectionist trade policies. Additionally, concerns around future projected water supply constraints, the decline in water quality, and increased competition for water from non-agricultural sectors will likely impact meaningfully on food production, especially but not exclusively in terms of volatility. Unless measures are taken now to strengthen the resilience of production systems and to learn, adapt and cope with climate change, agriculture will become more vulnerable over the medium to long-term, posing new risks to farming and food production.

The UN Climate Change Conference in Glasgow (UNFCCC COP 26, 2021) brought together 120 world leaders and over 40 000 registered participants (delegates, observers and media representatives) to negotiate global commitments and new climate plans. The four overarching commitments from COP26 are:

1. **Secure global net zero by mid-century and keep 1.5 C degrees within reach by:**
   - accelerating the phase-out of coal based energy generation
   - curtailing deforestation

- speeding up the switch to electric vehicles
- encouraging investment in renewables

2. **Adapt to protect communities and natural habitats.**
3. **Mobilise at least $100bn in climate finance per year.**
4. **Work together to deliver;** finalising the Paris Rulebook and accelerate action to tackle the climate crisis through collaboration between governments, businesses and civil society.

Although COP26 is recognised as the world's most significant summit on climate change, questions remain around whether the actions and comments are enough to avoid the potentially catastrophic effects of climate change. As noted by UN Secretary-General António Guterres at the conclusion of the conference, "The outcome of COP26 is a compromise. It reflects the interests, the contradictions and the state of political will in the world today. It is an important step, but it is not enough."

WHAT IS NET ZERO AND WHY IS IT IMPORTANT

Net Zero is the requirement to cut greenhouse gas emissions to as close to zero as possible, with any remaining emissions re-absorbed from the atmosphere by oceans and forests. Net Zero is largely accepted as the scenario that will avert the worst impacts of climate change and preserve a liveable planet. To achieve Net Zero, the global temperature increase needs to be limited to 1.5°C above pre-industrial levels. Currently, the Earth is already about 1.1°C warmer than it was in the late 1800s, and emissions continue to rise. To keep global warming to no more than 1.5°C – as called for in the Paris Agreement – emissions need to be reduced by 45% by 2030 and reach Net Zero by 2050 (UNFCCC COP 26, 2021).

The energy sector is generally recognised as the source of approximately three-quarters of greenhouse gas (GHG) emissions (EPA, 2017) and actionable commitments to reduce emissions from the energy sector are imperative to avoiding the worst effects of climate change. Replacing high polluting fossil fuel (coal, gas and oil) power with renewable energy sources (wind, solar, hydro-electric) will dramatically reduce carbon emissions. The energy sector focus is undoubtedly necessary, but not sufficient. Getting to net zero by 2050 is going to require a revolution in the way in which we produce and prepare everything we eat and wear, requiring unprecedented innovation and investment across all value chains.

The agricultural sector has a multifaceted role when it comes to climate change. It is recognised as a significant net contributor to greenhouse gas emissions, both carbon dioxide (CO2) and Methane (CH4). According to the United Nations Statistics Division (UNSD), direct emissions from primary agricultural make up around 22% of the world's greenhouse gas emissions, with the entire agricultural food chain (including fertiliser, transport, processing, and domestic and foreign trade) contributing a further 7% *(IPCC, 2019)*. However, agriculture also mitigates the impact of climate change through carbon sequestration and plays a vital role in the livelihoods of around 40% of the global population through job creation, poverty alleviation and the provision of food security. Ensuring implementation of sustainable agricultural practices and responsible management of all natural resources across the interconnected sectors of energy, mining and agriculture is imperative to sustain economic activities that enhance livelihoods and address climate change.

Truly addressing climate change and prioritising the interventions and investments that are required to achieve net zero by mid-century requires a cross-sectoral, integrated approach with respect to the water, energy and food nexus. According to the Food and Agriculture Organisation of the United Nations (FAO, 2014) "Water-food-energy connections lie at the heart of sustainable, economic and environmental development and protection". With the demand for all three resources still growing and supply limited, the actions within and across the sectors need clear consideration on the effects and trade-offs across all sectors.

Agriculture's role in climate mitigation is a much broader topic than climate science alone can inform. Improved and accelerated innovation, investment and impact within the sector requires greater understanding and cohesion between policy-makers, stakeholders, and society at large.

SOUTH AFRICA'S COMMITMENTS AND POLICY FRAMEWORK:

As part of its efforts to meet the Paris Agreement Climate Change objectives, South Africa has reiterated its commitment to limiting the world's average temperature rise below 2°C as compared to pre-industrial levels. In alignment with the Global Net Zero commitments made at COP26, it will also pursue efforts to limit the global average temperature rise to 1.5°C. This updated and enhanced ambition was articulated as part of South

Africa's revised Nationally Determined Contribution (NDC) on 14 September 2021. The updated NDC target range is expressed as being between 398 and 510 Mt CO2 equivalent (CO2-eq) in 2025, and between 350 and 420 Mt CO2-eq in 2030. South Africa's latest greenhouse gas emissions inventory puts total emissions (including forestry and other land use) at 482 Mt CO2-eq in 2017 with emissions from the electricity sector at 214 Mt CO2-eq and agricultural at 52 Mt CO2-eq. South Africa's CO2 emissions are amongst the highest per capita in the developing world. This is due to it's strong reliance on a coal-based energy production system, and heavy emissions from the transport sector.

Prior to the COVID-19 pandemic, projections under currently implemented policies suggested that South Africa's emissions trajectory for 2030 would decrease by around 50% compared to 2020 levels. Projections of COVID-19 impacts on future emissions suggest that South Africa's emissions may decrease further towards 2030 by around 8 to 10% below pre-COVID-19 projections. Despite the delay in the enactment of the Climate Change Bill and alignment of sectoral policies to the NCCRWP, there are some policies, regulations, plans and programmes in place that intend to deliver emissions reductions. These include the Renewable Energy Independent Power Procurement Programme (REIPPP), a competitive procurement programme for renewable energy, and cross-sectoral carbon tax (2019) aimed at providing a price signal to producers and consumers of carbon-intensive products.

There are a limited number of policies in South Africa's agricultural and forestry sector that are targeted at climate change mitigation. The Second Biennial Update Report specifies two Long Term Mitigation Strategy (LTMS) measures on enteric fermentation and reduced tillage, but there is no information on their state of implementation. The Draft Climate Smart Agriculture Strategic Framework for Agriculture, Forestry and Fisheries (2018) outlines the role that Climate Smart Agriculture (CSA) can play in addressing vulnerabilities facing the agriculture sector, however no evaluation and monitoring of implementation has been published yet.

South Africa is exceptionally vulnerable to climate variability and changing weather patterns since it is highly dependent on rain-fed agriculture and limited in high potential cropland. The country is known to have high levels of poverty, particularly in rural areas, with a low adaptive capacity. South Africa already experiences a high degree of risk from natural hazards and disasters, such as droughts, floods, and storm-related events. These include high winds, coastal storm surges, and hail, all of which are likely to be exacerbated by climate change (DEA, 2013 and Schulze, 2019). Table 16 presents a summary of historic and projected future changes in South Africa's climate patterns.

Table 16: Historical and projected changes in South Africa's climate

	Historical Observations	Future expectations
Temperature	• Considerable temperature increases since the 1960s - average temperatures have increased by 1.5°C (World Bank Group, 2021) • Both maximum and minimum daily temperatures have risen across all seasons, with temperature extremes increasing significantly both in frequency and intensity.	• Rising temperatures are expected to continue, with mean monthly temperatures projected to rise 2.0°C by the 2050s and 4.2°C by the 2090s, under a high-emission scenario (RCP8.5) (World Bank Group, 2021). • Most pronounced increases in temperature are projected for the summer months, between November to March. • By mid-century, the Northern Cape, North West and Limpopo Provinces will likely see an increase of 'hot days' (TMax >35°C) of between 20 and 40 days per year, while by the end of the century hot days will occur on more than 120 days per year.

Table 16: Historical and projected changes in South Africa's climate (Continued)

	Historical Observations	Future expectations
Precipitation	• Precipitation trends exert a high degree of interannual variability for South Africa. • Since the 1960s, a marginal reduction in rainfall was experienced during the autumn months.	• While annual rainfall trends are weak overall, observations point to potentially significant decreases in the number of rain days across almost all hydrological zones, implying a tendency towards an increase in the intensity of rainfall events, coupled with prolonged dry spells.
		• Projections remain uncertain with most models pointing to annual rainfall declines for the country, although winter rainfall amounts are projected to increase along the east coast areas and the eastern escarpment. • By mid-century, a drying trend is projected for western portions of the country. The southwestern regions of the country are thought to be at high risk of severe droughts during this century and beyond.

In summary: It is in the interest of the country to invest in transitioning to a low carbon society, which will reduce the risks and impacts of climate change, alleviate poverty and improve livelihoods and well-being. While the South African Government has committed to international climate change abatement objectives, the country's dependence on coal and the enormous pressure on the electricity generating capacity will likely limit enforceability of intentions and commitments.

BFAP ANALYTICS: THE ROLE AND IMPACT OF AGRICULTURE WITHIN THE CONTEXT OF CLIMATE CHANGE

When it comes to climate change and understanding the impact that temperature and precipitation changes will have on South Africa's agricultural sector, BFAP has combined its suite of models and industry experience to provide independent, research-based analyses to support decision-making at policy level as well as at farm and supply chain level.

The effects of climate change on agriculture should be seen in terms of both the productivity of farming operations and the risk of disruption of production, with implications for food security and incomes for South African households. There is evidence that smallholder and subsistence dryland farmers are more vulnerable to climate change than commercial farmers. By contrast, large-scale irrigated production is probably least vulnerable, but due to the intensive input regime is a greater contributor to emissions and also has the ability to invest in mitigation and renewable alternatives, conditional upon availability of sufficient water supply for irrigation.

The extent of the impact depends on the magnitude of climatic changes affecting the system (exposure), the characteristics of the system (sensitivity), and the ability of people and ecosystems to deal with the resulting effects (adaptive capacities of the system). The impact of climate change on food production and agricultural livelihoods, and thus on food security in South Africa, is significant and, while undoubtedly a national policy concern, is also likely to have spill over impacts beyond the country's borders.

Adaptation options for the agricultural sector include implementing "climate smart agriculture practices"; improving water management, monitoring and early warning systems; developing knowledge and decision-support systems; and developing new crop varieties and technologies to support farming systems. Furthermore, implementing soil and water conservation strategies

should be a priority. However, in South Africa barriers to adaptation are linked to a much-reduced extension service capacity and a slow uptake of Climate Smart Agriculture and investment into innovative technologies. Local adaptation options themselves will be unique to the very wide variety of agricultural practices in large scale commercial, smallholder, and subsistence agriculture. These, however, need to be effectively communicated to farmers and in most cases training and extension services are required.

BFAP has and continues to apply its models and analytical approach to quantify and illustrate possible impacts of climate change. Selected examples of BFAP's work relating to climate change include:

- **Value chain prioritisation and deep dive analytics:** Focusing on value chains adds an additional dimension to the complexity of climate change modelling and impact analysis as exposure is not only limited to primary production but also the broader agri-food system and possible expansion/land use changes. In the long term, climate change and global warming could severely impact investment in developing newer and more adaptable value chains. Climate change may increase the risk to and volatility of raw material supplies to the agro-processing sector and other investments beyond the farmgate. Thus, key value chains are expected to need more proactive investments in order to mitigate climate change risks and ensure food security. In time, some value chains might face financial and insurance support challenges due to high exposure and/or sensitivity to climate change. When prioritising value chains for development and investment opportunities, factors to consider can be categorized as measuring:
    - **Contribution** to climate change i.e., "what are value chains contributing to climate change" and
    - **Resilience** to climate change, i.e., "quantify the resilience of a value chain to climate change".

- BFAP applies these principles in a Policy Prioritisation through Value Chain analysis (PPVC) project in a number of African countries in collaboration with the International Food Policy Research Institute (IFPRI) and the Alliance for a Green Revolution in Africa (AGRA). (see BFAP's work on Coffee, Aquaculture and Beef in Kenya)

- **Contribution to the Long-Term Adaptation Strategy (LTAS)** report on agriculture by SANBI:
  BFAP was tasked to convert climate model outputs (projected future changes in temperature and precipitation) into assumptions for BFAP's partial equilibrium market model, which was used to run stochastic distributions of potential yield, area and price impacts (therefore impact on value generated) on the maize and wheat value chains in South Africa.

- BFAP has completed multiple pieces of analyses on "**land use and land use change over time"**
    - A pertinent example is that of wheat produced in the Free State: over the past 2 decades, area planted to wheat in the Free State province decreased significantly. This structural change was not only driven by climatic suitability factors, but economic and marketing structures also played a substantial role in the decreased profitability of wheat production in the Free State.
    - Another piece of work relates to the quantification of potential grazing area in South Africa. In Figure 100, the 2019 landcover dataset was used to compile natural grasslands, shrubland, commercial annual crops (rainfed and irrigated) as well as fallow land and old fields as a proxy for all land cover types potentially used for grazing. South Africa's livestock herd growth is limited by natural resource availability and the efficiency of its use. In conjunction with Figure 100, the cattle density per local municipality in Figure 101 shows that areas of high cattle-density, coincide with former homeland areas characterised by widespread human settlements and limited grazing land expansion potential.

- BFAP has worked on a number of spatial climate suitability and yield potential analyses as well as land use analyses and implications for competition for resources among various sectors. A prime example is the report on mining and agriculture in the Mpumalanga Province (BFAP, 2012; BFAP, 2015)).

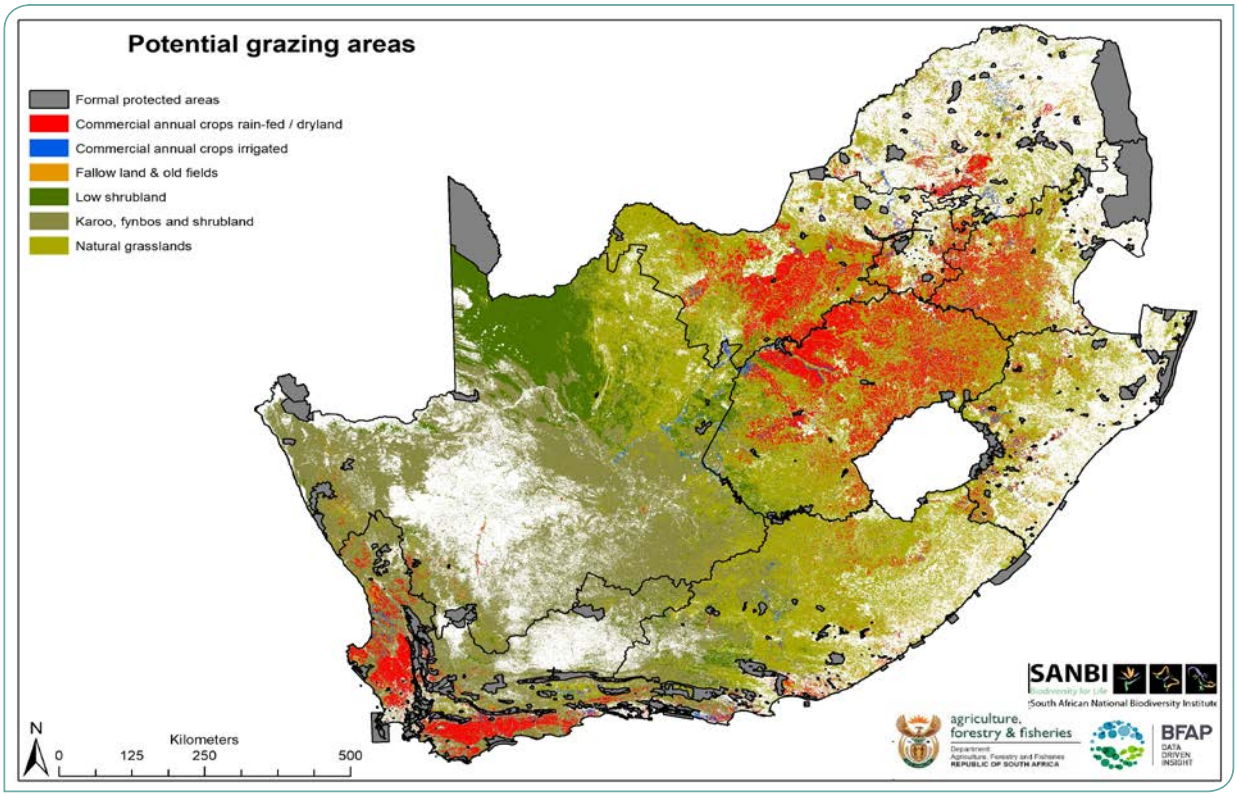


Figure 100: Potential Grazing areas in South Africa

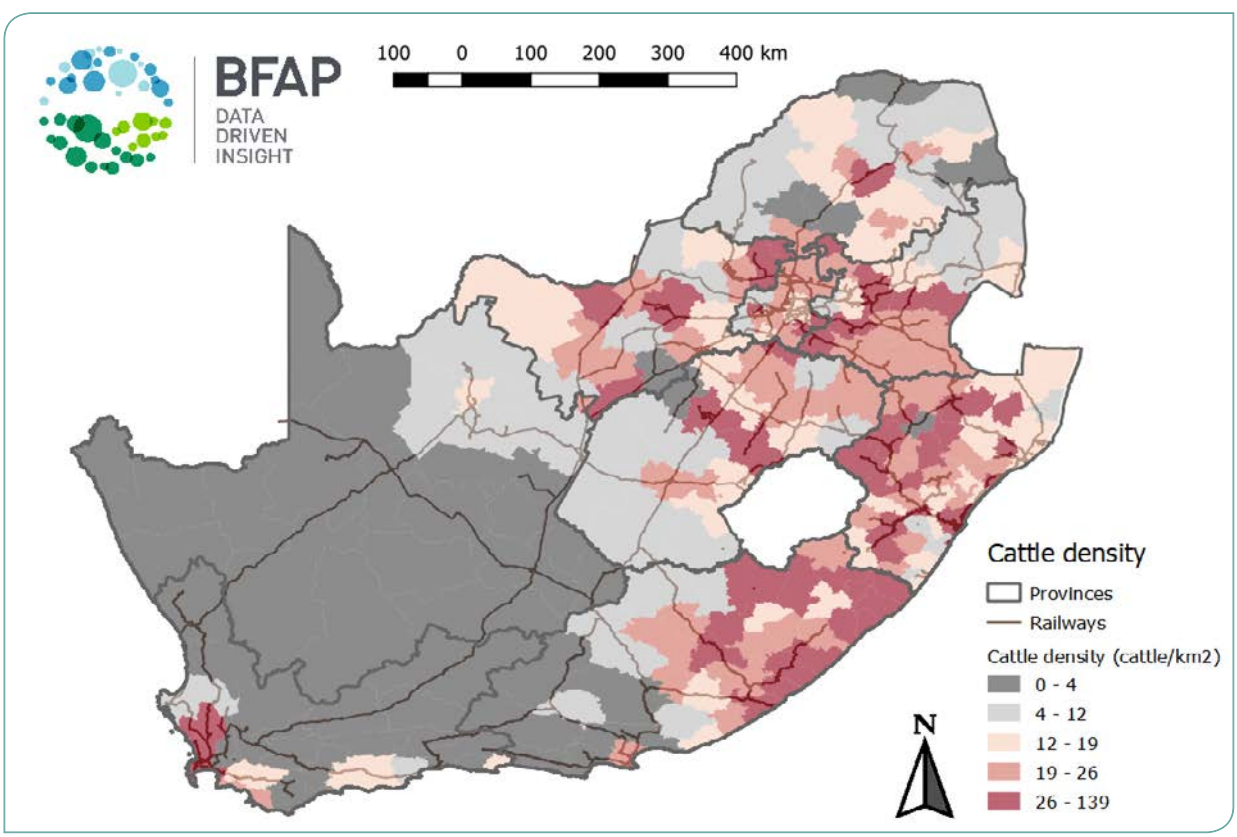


Figure 101: Cattle density in South Africa - number of cattle per local municipality

Source: Compiled from Stats SA, 2016

THE LAND – WATER - ENERGY – FOOD NEXUS:

The requirements to effectively manage climate change and limit global temperature increases to a maximum of 1.5°C will require a fundamental shift in the way in which everything that humans consume is produced and the way that humans consume everything that is produced. This is a colossal undertaking in the context of the current global population and socioeconomic realities. It is also further magnified when considered in the context of the expected population growth and upliftment requirements. The primary raw materials that are required to satisfy increased human demands, whether it be for food and beverages, materials for building or clothing, energy, technology or transport, are mined or produced using land, water and energy.

Net Zero commitments require strategic value chain partnerships to go beyond merely investment in renewable power generation and that drive value chain decarbonisation. Balancing the use and management of natural resources (land and water) to satisfy the increasing demand of human activities (energy and food) and socio-economic upliftment (jobs, equality) will require careful strategic planning and cross-sectional trade-offs.

The concept around the Land – Water - Energy – Food Nexus is increasingly being recognised as one of the central themes within the Net Zero requirements and commitments. BFAP continues to lead research and to refine and enhance our modelling frameworks to provide credible analytical insights that support informed decision making in the complex and ever evolving topic of the Land – Water - Energy – Food Nexus (Figure 102).

Figure 102: Illustration of the Integrated Framework to Net Zero Commitments

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